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EDITORIAL

★

WELCOME TO OUR ROYAL GUESTS

In common with all other citizens of Australia, we, the members of the Wireless Institute of Australia, humbly extend to our Royal Guests a hearty and sincere welcome to this "Our Land."

As this is the first occasion on which a reigning Queen has visited Australia, we are deeply appreciative of the honour bestowed upon us and look forward to the time when Australia will become the second home of our Queen and her family.

We pledge ourselves to do everything in our power to make this visit a happy and memorable event.

Taking a lead from the Motto of the Boy Scouts, we will hold ourselves prepared at all times to serve loyally.

"GOD SAVE THE QUEEN."

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SKELETON SLOTS

BY A. HAVYATT,* B.E., G3IFS/VK2AET

SLOT aerials were developed during World War II. for use at centrimetric wavelengths in order to provide an efficient radiator for energy at those ultra high frequencies. They were originated in wave-guide technique for radar, and with subsequent development, have been used for v.h.f. broadcasting and other v.h.f. purposes.

About three years ago the B.B.C. erected at Wrotham, England, a radiator for 90 Mc. f.m. transmission and this radiator is technically described as an assembly of co-phased slots on the surface of a vertical cylinder. This, in effect, consists of 32 slot radiators arranged in eight tiers with four in each tier spaced equally around the circumference of the vertical cylinder. In addition, it has been suggested that this form of radiator would be suitable for use in aircraft by cutting slots in the aircraft skin and plugging with dielectric, thus avoiding the use of projecting v.h.f. aerials. A further suggested application is their use as marker and landing beacon radiators on aerodromes when they could radiate from horizontal slots let into the surface of the ground, even in the surface of a runway if necessary.

At centrimetric wavelengths, energy is transmitted more efficiently as bounded electromagnetic waves in a wave-guide than as currents in a conductor. When it is required to radiate the energy which is being carried by the wave-guide, it is not necessary to put the energy back into current form and then radiate from an aerial, but instead, the electromagnetic wave can be radiated directly.

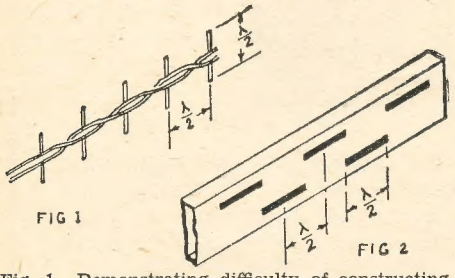

Fig. 1.—Demonstrating difficulty of constructing an array of dipoles at centrimetric wavelengths.
Fig. 2.—Radiating slots equivalent to the array of dipoles in Fig. 1.

It is easy to understand that an array of dipoles (Fig. 1) would be difficult to construct in order to provide correct phasing and impedance matching at these frequencies so that some other form of radiator becomes desirable.

This problem is overcome by punching a row of holes in the side of a wave-guide so that each hole radiates some of the energy passing down the guide. It is, of course, necessary to make the holes of suitable length to act as radiators, and also to space them correctly so that they are fed in uniform phase (Fig. 2).

HOW A SLOT RADIATES

You will no doubt be asking now how slots manage to act as radiators, and it is a little difficult to see what they have in common with other types of aerial. First of all, a slot in an infinite sheet is closely equivalent to a flat strip dipole in free space if it is assumed that the shapes of conductor and dielectric be interchanged. Reference to Fig. 3 will make this analogy clear where it will be noted that the input impedance is approximately 70 ohms in the case of the dipole and 500 ohms for the slot.

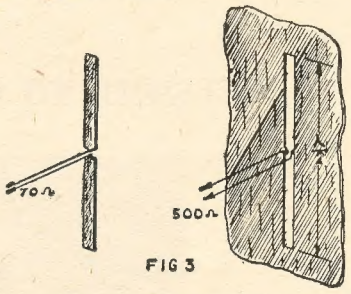

Fig. 3.—Dipole and corresponding slot in an infinite sheet.

It is well known that the electric component of the field from a dipole is in the same direction as the dipole, i.e. horizontal polarisation is obtained from a horizontal dipole. And as the electric field is at right angles to the magnetic field, it follows that the magnetic field from a horizontal dipole will be vertical. Other well known facts that emerge in connection with the dipole are that it has maximum current at the centre and maximum voltage at the ends.

However, in the case of the slot, it can be seen that, viewed from the feed point, the slot edges form short-circuited quarter wave transmission lines. This arrangement has a high input impedance, so that heavy currents will flow in the short-circuited ends and a high voltage will appear across the feed point, its value tapering off towards the short-circuited ends. This voltage across the slot lips forms an electromagnetic field in the slot which is free to radiate outwards from both sides of the sheet. The electric field is polarised in a plane at right angles to the slot length, i.e. horizontally, whilst the electro-magnetic field is vertical, assuming a vertical slot. **The important point that emerges here is that the horizontal dipole and the vertical slot both produce horizontally polarised radiation.**

The vertical electro-magnetic radiation, and hence horizontal electric field, could also be explained by the fact that current flows in the horizontal ends of the slot causing radiation of energy, whilst currents flowing in the vertical sides flow in opposite directions and cancel each other out (Fig. 4).

Another point of great similarity between the slot and the dipole is that each can be folded to alter its input impedance. A folded dipole has its impedance increased fourfold, whilst the folded slot has its impedance reduced to a quarter of its original value, with a resultant construction as shown in Fig. 5.

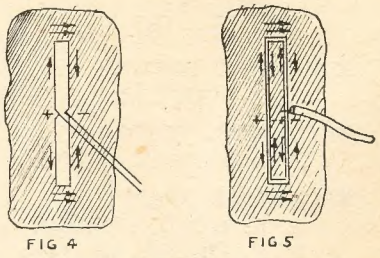

Fig. 4.—Distribution of current in sheet surrounding slot radiator.
Fig. 5.—Folded slot.

FIELD STRENGTH PATTERNS

At this stage it would be as well to examine the field strength patterns of the slot aerial to enable a comparison to be made against the ordinary dipole. It will be seen (Fig. 6) that the horizontal pattern has a figure-of-eight shape similar to that which is obtained from a horizontal dipole, whereas the vertical pattern has higher energy radiation parallel to the ground than at right angles to it. This latter pattern reveals the difference between the two aerials as the corresponding dipole pattern would show equal radiation in all directions.

It is immediately apparent that the vertical radiation pattern is somewhat similar to that which would be obtained from two stacked dipoles, or a "one-over-one," and is therefore a very desirable feature for v.h.f. propagation. In addition, a conventional type of dipole reflector can now be added which gives this simple aerial a forward gain in excess of 4 db and having a broad frontal lobe.

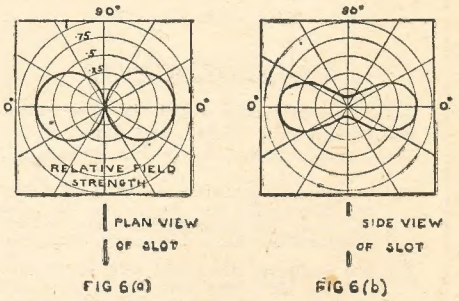

Fig. 6 (a).—Horizontal radiation pattern.
Fig. 6 (b).—Vertical radiation pattern.

PRACTICAL DESIGN

So far the discussion has centred around slots cut in an infinite sheet which is impracticable and still continues to be so for sheets of finite size owing to high wind resistance and difficulty in arranging for rotation, not to mention being most unsightly. One way out of the difficulty is to use a construction of wire netting, this in fact being quite permissible and resulting in a satisfactory aerial for certain applications. But in experiments to determine how much of the sheet could be cut away to reduce unnecessary metal, it

* 23 Archbold Road, Roseville, N.S.W.

was found that satisfactory operation could still be achieved with quite a narrow band of metal provided the width of the slot was increased as the surround was decreased. This led to the construction of a radiator in small diameter tube and ultimately became known as the skeleton slot aerial. For successful operation it was found that the tube diameter should not be less than $\frac{5}{8}$".

Owing to the fact that a point of minimum voltage appears at each end it is not necessary to employ insulators, and the aerial does in fact lend itself to all metal construction if this is desired. A slot aerial employing the Yagi method of construction is impracticable so that stacked construction must be employed to obtain a smaller vertical angle of radiation, and dimensions for a two-stack skeleton slot suitable for use on two metres are given in Fig. 7.

Flat or circular twin feeder of 300 ohm impedance may be used to provide effective feeding and matching to the elements. When 300 ohm feeder is used as phasing lines, it has a velocity factor of 0.82, so that if half wave lines are used, thus giving the same impedance at the feed end as the element impedance, they should be 33" long. Then, two such sections in parallel for the array illustrated will present an impedance of approximately 250 ohms, to which 300 ohm transmission line may be attached without serious mismatch. If on the other hand it is desired to use 75 ohm co-axial transmission line, the phasing sections may be made three-quarter wavelength long, i.e. 50", so

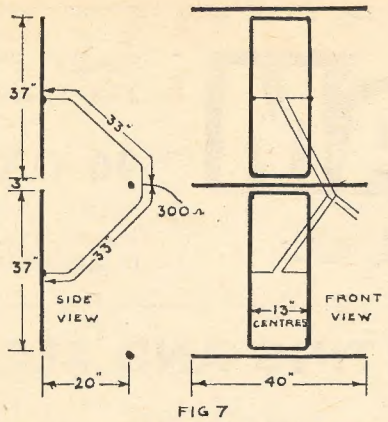

FIG 7

Fig. 7.—Dimensions of Two-Stack Two-Metre Skeleton Slot showing feeder connections.

that the feed point impedance becomes 90 ohms, to which 75 ohm co-ax transmission line may be attached again with a permissible degree of mismatch. A better match may be obtained by using a Q-bar section which can be calculated to suit individual requirements.

There is no need to limit this array to two elements, as any number may be used provided arrangements are made to feed and match the sections correctly, and standard methods of doing this can be employed.

CONSTRUCTION

A satisfactory material for construction of the skeleton slot is $\frac{5}{8}$" screwed conduit, but care should be exercised in bending the corners, for which a bending machine of the type used by electricians is an advantage. Reflectors can be of the same material to provide uniformity of appearance.

It will be necessary to fit projecting pieces from the middle of each side of the slot towards the centre so that the phasing lines can be attached. They may be of a lighter material and $\frac{1}{4}$" copper is suggested, as long as these projections are not expected to take too much pull from the phasing lines. Alternatively, an extra length may be left on the half wave phasing sections so that they can be split down the middle and parted to make a connection to each side.

CONCLUSION

The skeleton slot aerial has not been developed to any great extent yet, although the slot aerial, from which it originated, is well established. Additional research and experimentation needs to be carried out so that keen v.h.f. workers should find plenty to interest them with this new aerial.

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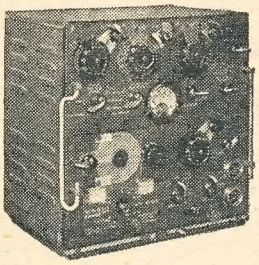

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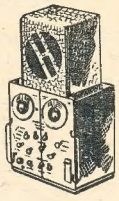

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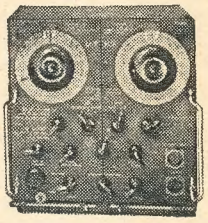


AERIAL COUPLING UNITS
Price £3/10/-

JUNCTION BOX AND CABLES
Price £5

POWER SUPPLY, 12 or 24 volt
Price £10

COMMAND

RECEIVERS

Type BC453, 190 to 550 Kc., **£12/10/-.**

BC454, 3 to 6 Mc., **£7/10/-.**

BC455, 6 to 9.1 Mc., **£7/10/-.**

TRANSMITTERS

Type BC457, 4 to 5.3 Mc., **£7/10/-.**

BC458, 5.3 to 7 Mc., **£7/10/-.**

BC459, 7 to 9.1 Mc., **£7/10/-.**

COMMAND MODULATOR UNIT, Type BC456E

In new condition, contains:

1—12J5
1—1625
1—VR150/30
3—24v. Relays

Price, £3/10/-

COMMAND RECEIVER CONTROLS, Type BC450

3—Slow Motion Dials.
6—Single Pole Double Throw Switches.
4—Miniature Jacks.
3—Volume Controls, approx. 500 ohms.

Price, £1/15/-
Post. & Pack.: 6/-, Interstate 8/6.

BENDIX RADIO COMPASS RECEIVERS

12v. input. Frequency ranges 200 to 410 Kc., 550 to 1200 Kc., and 2.9 to 6 Mc. Complete with 12 valves and genemotor. Valve line-up: 4—6K7, 2—6N7, 1—6L7, 2—6J5, 2—6B8, 1—6F6.

£24/17/6

U.H.F. MIDGET HOMING RECEIVERS

Frequency range: 234-258 Mc. Can be operated from either 12 volt or 24 volt internal change-over switch. Valve line-up: 1—955, 3—954. Manually tuned dials calibrated in frequency.

£4/19/6

MAGNAVOX

Two valve Interphone Amplifiers. Valves: 1—12A6, 1—12SL7. Complete with filter choke and output transformer.

£2/10/-

VALVES

BRAND NEW IN ORIGINAL CARTONS

1H6	7/6	813	60/-
1K7	10/6	VR150/30	22/6
6AC7	15/-	954	7/11
6B8	15/-	12A6	12/6
6F6	12/6		
2051	22/6		
6K6G	12/6		
6L7	12/6		
807	25/-		
830B	60/-		

2050, 22/6. This valve is suitable for use with Photo Cell Relay Unit, as per June, 1953, issue of "Radio and Hobbies."

ASD RECEIVERS TYPE CPM-46A-BG
V.H.F. RECEIVERS, approx. 300 Megs.

Containing the following Valves:

9—6AC7	2—6V6G	1—6SJ7
1—6H6	1—6SN7G	2—6X5GT
2—2050	2—VR105/30	2—5U4G
1—6A4G	1—VR150/30	2—2A3

Price £17/10/-

TRANSMITTER-RECEIVER Type RT-34/APS-13

Frequency Modulated, approx. 450 Mc. Valve line-up:
9—6AG5
5—6J6
2—2D21
1—VR105

Also contains Dynamotor, input 27v. 1.5 amp., output 285v. 60 Ma. Price **£17/10/-**

GENEMOTORS

Type 72—Input: 27v. 3.6a., Output: 250v. 70 Ma., and 12.6v. 2.6 a., **£1/19/6.**

Type DA-3A—Input: 28v. 10.5a., Output: 300v. 260 Ma., 150v. 10 Ma., 14.5v. 5a., **£1/9/6.**

Type 31—Input: 18v. 12a., Output: 7.2v. 13a., 225v. 110 Ma., **£1/19/6.**

TRANSMITTING TUNING UNITS by G.E.

Type TU10B
10000 to 12500 Kc., **£2/10/-**
Type TU7B
4500 to 6200 Kc., **£2/10/-**
Type TU6B
3000 to 4500 Kc., **£3/10/-**
Type TU9B
7700 to 10000 Kc., **£2/10/-**

BENDIX RADIO AZIMUTH CIRCLE LOOP AERIAL CONTROLS, Type MN22A

Price 35/-.
Post. & Pack.: 4/9, Interstate 6/-.

LET'S LISTEN

BY C. A. CULLINAN,* VK7XW

Here is a simple c.w.-phone monitor which is r.f. driven. It operates over a wide frequency range without tuning and can also be used as an audio oscillator for code practice or tone work. The note is rich in harmonics which makes for easy listening. It's a small gadget of immense value in any station.

We all know that it is a very desirable practice to be able to monitor our own signals and for phone work a simple diode operating a pair of headphones appears to be quite a favourite. However, when it comes to the matter of monitoring one's c.w. signals, the problem is much more difficult.

Obviously the finest way is to devise some means of listening to the signal "off the air" with a high-quality device which will give a true reproduction. A good frequency meter will do this and if sufficiently good, will show chirp and other faults very quickly. However, this ideal method has the great disadvantage that the signal must be accurately tuned in on the monitoring device—this is time consuming and in these days of universal use of v.f.o's., is rapidly falling out of favour as are other methods which require tuning.

At the other end of the scale is the simple audio oscillator which is keyed simultaneously with the transmitter. This method is really simple, but does not give any clue as to what the actual signal is doing.

Whilst doing some work on the problem of telemetering for a b.c. station remote control system, it was realised that in a simpler form here was the answer to the problem of a c.w. monitor that lay in between the two extremes quoted. Then it was quickly seen that with a simple switching system a monitor could be built for either c.w. or phone operation as well as being useful as a code practice oscillator and a.f. source.

Basically the idea is to pass a sample of the carrier through a loaded rectifier and use the resultant positive voltage to drive an audio oscillator.

This then is the answer to the whole problem and in practice it works to perfection, and in the completed instrument gives loudspeaker (or headphone if desired) monitoring of both c.w. and phone transmissions "off the air."

Let's look at the circuit. A 6SN7 dual triode valve is used as a combined diode audio oscillator, a 6V6 is employed as an audio amplifier, whilst a 6X5 provides the necessary d.c.

The r.f. circuit is untuned to get over the objections to tuned circuits. The grid and plate of one half of the 6SN7 are strapped together for diode operation, the cathode having a 0.5 megohm load resistor shunted by a condenser of 0.00025 uF.

The output of the diode is fed to a switch for c.w. or phone operation.

The audio oscillator is a Hartley circuit using a push-pull output transformer. The audio note is governed by the values of C4, C5, C6, R2 and the applied voltage.

Quite a lot of experimenting can be done with these components to get a suitable note. However, it must be borne in mind that an oscillator of this kind is very rich in harmonics.

The output of the oscillator goes to a 6V6 audio amplifier by means of a second section of the c.w.-phone switch. In phone work the oscillator is disconnected from the circuit and the demodulated output of the diode is passed to the audio amplifier.

In order to key the oscillator for use as a code practice unit, a jack of the type shown is connected to key in the cathode of the oscillator. This jack also removes the diode from the circuit and substitutes B plus voltage from a voltage divider.

With a 5" loudspeaker, the unit will provide ample volume for any average room for c.w. practice.

In our case, the whole unit was built into a small metal box and coupling is made into the transmitter with a small coil at the end of a piece of co-ax cable. Care must be taken to ensure that the r.f. being fed into the circuit is from one's own transmitter. If it is used near a b.c. or other station, there may be a background of this station, but some shielding and a little care will take care of this except for those who operate in the immediate vicinity of such a station. For them, the input should be tuned.

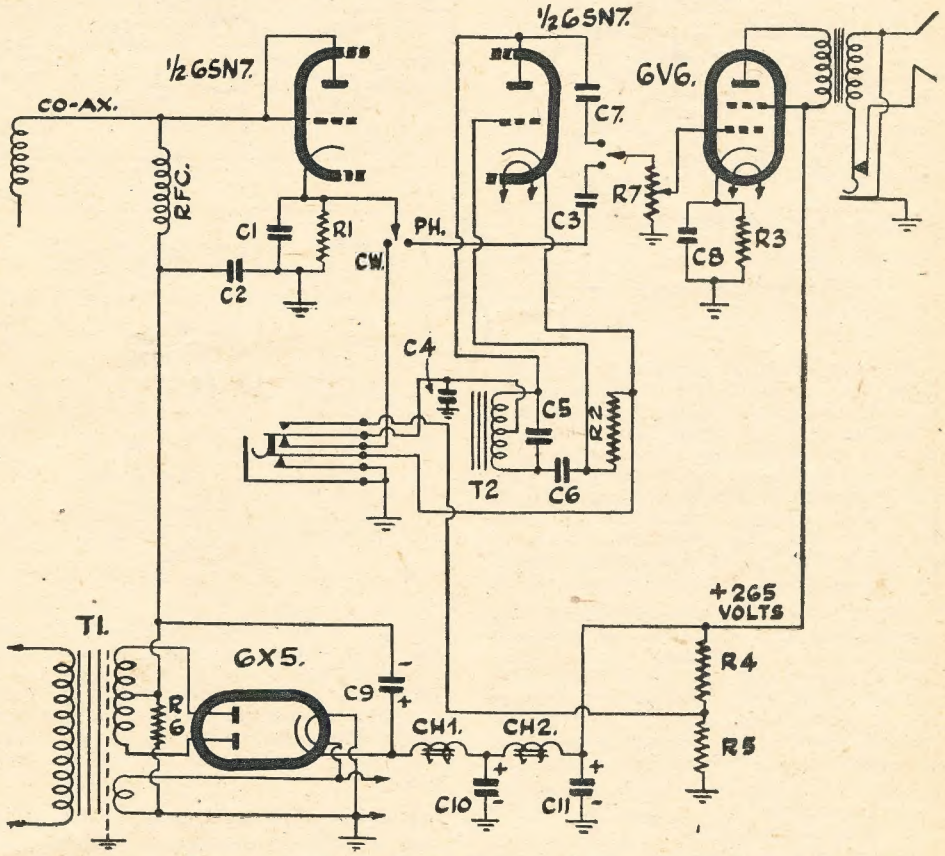
In the absence of a signal there will be a small residual current flowing in the diode load resistor and although the resulting voltage is very low it could cause the oscillator to operate very weakly. This would give the impression of a back wave. In this design it has been overcome by applying a small negative voltage to the diode via resistor R6. Be careful to note the connections to the electrolytic condenser C9.

Alternatively, a crystal diode, correctly connected may be used in place of the half 6SN7, in which case any medium mu triode may be used for the oscillator.

In use the unit should be used with just enough coupling to produce a good note with an unmodulated carrier. In phone work the volume will be less than that for c.w. for the same input and volume settings.

The condenser C4 (0.1 uF.) should not be changed as with this value the unit should key satisfactorily up to at least 40 w.p.m. There may be a slight chirp due to the fact that the oscillator is being keyed (either directly or indirectly) and for this reason the transmitter keying should be checked from time to time by other means.

If you should go on phone after a c.w. session and the output of the monitor is garbled, you will probably find that the switch is in the c.w. position and the oscillator is operating on modulation.



C1—0.00025 uF. mica.
C2, C3, C4—0.1 uF. 200v. tubular.
C5—0.003 uF. mica.
C6—0.01 uF. mica or tubular.
C7—0.05 uF. 200v. tubular.
C8—25 uF. 50v. electrolytic.
C9, C10, C11—8 uF. 525v. electrolytic.

R1—0.5 megohm ½w.
R2—0.1 megohm ½w.
R3—250 ohm 3w. w.w.
R4—0.2 megohm 1w.
R5—20,000 ohm 1w.
R6—25 ohm 3w. w.w.
R7—0.5 megohm volume control.
RFC—2.5 mH. R.F. Choke.

T1—Power Transformer; primary to suit mains voltage, secondary h.t. 300-0-300 at 40 Ma., l.t. 6.3v. at 2 amp.
T2—Push-pull output transformer, 10,000 ohms c.t. (secondary not used).
CH1, CH2—Low resistance filter chokes.
Sundries—Two jacks as shown, one wafer switch as shown, one loudspeaker to match 6V6 valve.

* 64 Lawrence Vale Road, Launceston, Tasmania.

THE COMPLETE AMATEUR

BY TOM ATHEY,* A.I.R.E.

Many times during the course of lectures at the Queensland Division of the W.I.A's. A.O.C.P. Classes, the question arose just what gear was required that a chap may become an Amateur, providing that he has his licence.

Consequently, as a past instructor, the author has decided to submit to the fraternity a series of articles dealing with the construction of a complete Amateur Station, capable of satisfying the most fastidious of intending Amateurs. The ethics of the sport, and it is a sport, he leaves to the instructors, as well as the general theory, knowing full well that this side will be adequately covered.

FIRST as to the requirements of a complete station. The rules and Regulations as laid down in the P.M.G. Handbook for the Guidance of Operators of Amateur Stations must be adhered to strictly. By doing this, many unnecessary "blues" will be avoided and no tempers frayed. So the main requirements left are a good stable transmitter, a means of monitoring the output, a frequency checking system, the elimination of unnecessary harmonic radiation, and last but not least, courtesy to other Hams. The latter is self explanatory and it is felt sure one that can be dealt without any further remarks.

This leaves the more technical aspect and it is this that it is proposed to discuss. Each portion of a transmitter will be described, and circuits have been drawn, giving a basis upon which to work. Although certain valve types are quoted, it is not absolutely essential that these be adhered to. In many cases they may be unprocurable, or the pocket may not be able to stand the outlay. However, the discussed type will form a definite basis for discussion.

Further, the author has always been an advocate of relay rack construction. Consequently, the whole rig is designed around a relay rack. This will give the rig a smart and professional appearance and give the constructor a definite pride and joy in his work. Too many rigs in the past have been "haywired" and although astounding results have been procured, even the owners admit that it could be cleaned up if they had the time. So chaps, when you begin your rig, begin it the right way—clean and neat.

It is as well to note here and now that the aerial tuning unit is not included in the rack. This is to assist in harmonic reduction. Keep your aerial tuning unit as far away from the rack as practicable. And so to our first description—

SECTION ONE

THE V.F.O.

Rack Panel measurements—19" x 4 units
Chassis not more than 17" x 8" x 2" deep

The circuit consists of the familiar electron coupled Clapp oscillator, followed by an isolator-buffer and then by a buffer-doubler to 80 metres.

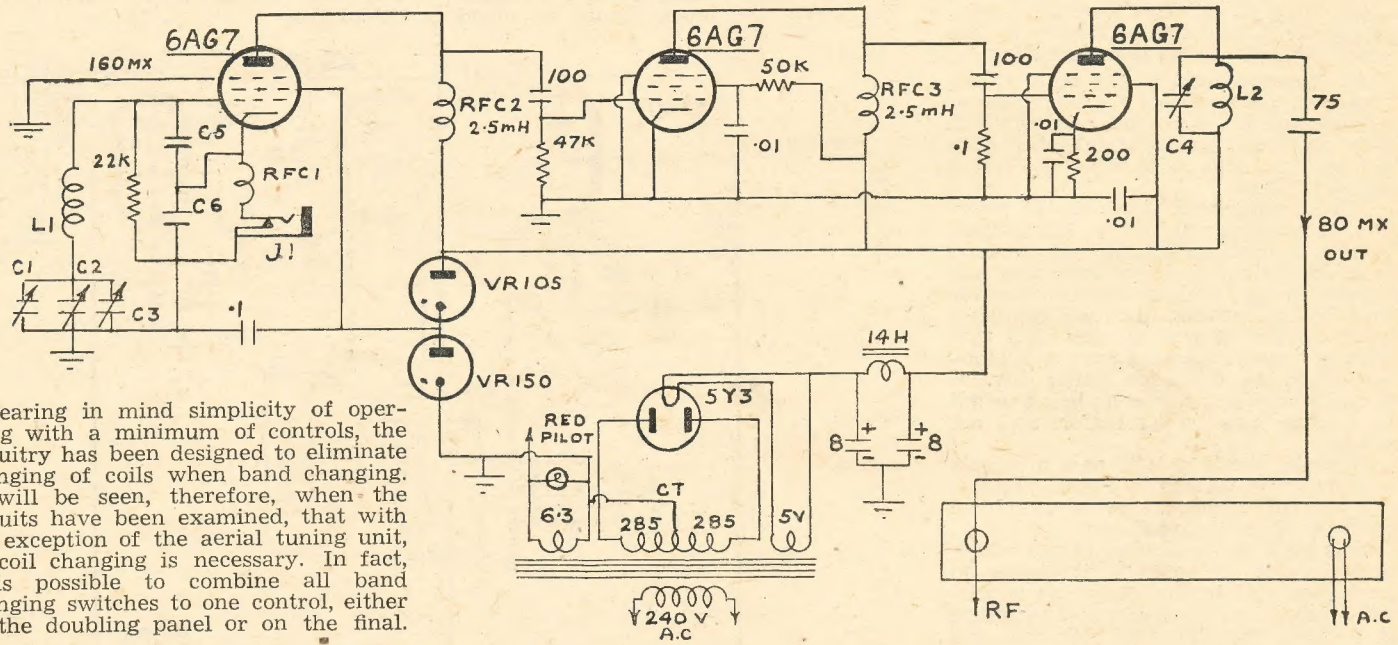
The 6AG7 is undoubtedly the best oscillator valve available, as harmonics can be taken from it down to the fifth with ease. The mu is high—in the vicinity of 11,000—and if possible this type should be adhered to. However, if it is unprocurable use a 6M5 or 6BW6 in that order.

The fundamental frequency decided upon was 160 metres or 1750 Kc. As the band width is 3.5 to 3.8 Mc. on the 80 metre band, this means the variation must be 1750 to 1900 Kc. Allowing for a small overlap at each end, the tuning assembly must cover 1700 to 1950 Kc.

The use of this low frequency is apparent. Just listen to any b.c. receiver working in the vicinity of 1500 Kc. and note how much drift from frequency is there—if any—and no great care taken! So use a low frequency for your fundamental. The values given will cover this range.

It is necessary to use high grade condensers in this unit. Double bearing shafted condensers preferably are best. In fact, it is recommended that the unit from the TU10 Tuning Unit be used.

Looking at the circuit, C1 is your main tuning condenser. C2 is a negative



Bearing in mind simplicity of operating with a minimum of controls, the circuitry has been designed to eliminate changing of coils when band changing. It will be seen, therefore, when the circuits have been examined, that with the exception of the aerial tuning unit, no coil changing is necessary. In fact, it is possible to combine all band changing switches to one control, either on the doubling panel or on the final.

The whole unit is more elaborate than seems necessary. But to make a really good job of a transmitter, it is necessary to incorporate everything that will provide flexibility of movement, tidiness and a job giving efficient and stable output. Hence the requirements for a complete transmitter should include:—

1. A variable frequency oscillator movement;
2. A crystal oscillator;
3. Doublers and/or triplers to all bands through 80 to 10 metres;
4. Provision for manual keying;
5. Provision for modulation;
6. Ease of antenna coupling; and
7. A minimum of switching.

It is proposed to deal with each portion of the transmitter separately and each circuit will, naturally, be included in the text. On each circuit all terminations are brought out to a panel to represent the rear of the chassis under discussion. Later on a complete diagram of cabling, interlacing all panel and chassis will be presented so that no error in cabling can be made.

* Ex-Instructor Qld. Division W.I.A. Classes; 41 Mountford St., New Farm, Brisbane.

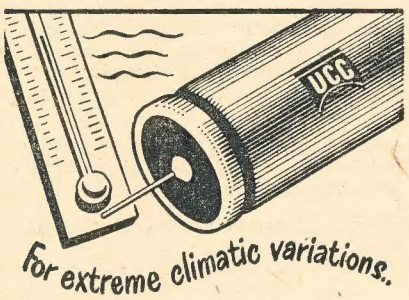
co-efficient condenser of 10 pF. capacity. Here you can use a Ducon N.P.O. type B ceramicon. C3 is a 5-25 pF. ceramic trimmer and again is a Ducon TS2A type N600 5-30 pF. trimmer. C5 and C6 have a capacity of 0.0015 uF. and must be silver mica. Use Ducon type SS even if the right capacity must be built up. Of course if other brands are available use them by all means. It just so happens that these types were available. The above values are critical so try and adhere to the values wherever possible.

The r.f.c. has an inductance of 2.5 mH. All coupling condensers between the isolator and oscillator, buffer and isolator, and the coupler to the output should be mica. All by-pass condensers can be of paper and tubular construction.

When wiring, use rigid lines for all grid wiring of the oscillator. Wire of a gauge about 14 s.w.g. or b. and s. tinned is good and will form a rigid joint.

Chassis layout is left to each constructor's choice. However, it is just as well to keep the grid circuit shielded from the plate circuit. This can be done by enclosing the grid components in a shielded box above the chassis and connect the plate wiring beneath it. In fact, it may be wise even to keep the coil and condenser shielded away from the valve and then enclose the whole in another shield. This will materially assist in stopping drafts from affecting the temperature and causing variation to frequency.

As the isolator's job is not only to disassociate any voltage variations between the oscillator stage and the succeeding amplifiers, but is also to act as a builder of voltage, any high-gain pentode with a high slope will act here. It is an untuned stage and is capacity coupled to the buffer-doubler, which is a power amplifier.



For extreme climatic variations.

U.C.C. "METALPACK"

It's the Super-Tropical capacitor made to withstand extreme temperature variations from —40°C. to +100°C. Check these big features: • Solid foil and paper assembly, non-inductive • Rigid outer aluminium casing • Non-hygroscopic processing for high performance • Full hermetic rubber sealing to tube and rivet • Spiral wire connection for maximum contact to element, brought through rivet and soldered.

Approved to Inter-Services Specification RCS131/2 and RCL131/1

UCC CAPACITORS FOR EVERY APPLICATION

UNITED CAPACITOR CO. PTY. LTD.

433 Punchbowl Road, Enfield, N.S.W. LF 3511.

U.C.C. 41.3

The output of the buffer-doubler is tuned to broad-band characteristics by the small trimmer across the coil, and in turn is fed to the multiplier chassis through a mica coupling condenser of 75 pF.

A small power pack is required, rating about 60-80 Ma. at 250 to 285 volts each side of centre tap. The h.t., after filtering, should be about 270v. Two VR tubes are used for voltage stabilisation —a VR105/30 followed by a VR150/30 in series. Thus the voltage to the oscillator plate is held at 255 volts, but the screen is held at 150 volts constant. It may be necessary to put a dropping resistor between the VR tubes and the h.t. supply, further isolating the oscillator from the normal h.t. feed.

After switching the unit on and allowing the unit to reach a steady operating temperature, no drift in frequency should be apparent if great care is taken in its construction. The v.f.o. has been designed to remain on during the entire transmission and only the master switch controls it. When the master switch (to be shown later) is put on it cuts in the v.f.o. and all filaments of each portion of the transmitter.

A final word on construction. A good dial is a must. One giving a high vernier action is most desirable, or the individual can devise some way to obtain an open reading that, at a future date, can be logged for future reference to assist in calibration.

If care is taken, the unit can be tuned by the one control and give fairly even output across the whole range of its traverse.

Incidentally, there is sufficient output from the buffer-doubler to enable it to act as a small low-powered c.w. rig on 80 metres. Hence once you have got this unit working, you can get "on the air toot sweet."

— . . . —

AMATEUR CALL SIGNS

FOR MONTH OF NOVEMBER, 1953

ADDITIONS

VK—

New South Wales

2VK—S. W. Grimsley, Charles St., Tweed Heads.
2AQN—J. F. Cox, Station: 3 New England Drive, Kingsgrove; Postal: 33 Oatley Rd. Paddington.

Victoria

3GH—P. D. Barnes, Woburn St., Heidelberg, N.22.
3UF—J. T. Lake (Major), Postal Address: C/o. Chief Signal Officer, Southern Command, Melbourne.
3WL—W. A. Wells, 23 Waterloo St., Camberwell.
3AAW—A4420 Cpl. Wright, A. W. H., R.A.A.F. School of Radio, Ballarat.
3AHN—G. Bills-Thompson, 6a Fairmount Road, Hawthorn, E.3.
3AXX—N. E. Turnbull, 53 Armadale St., Armadale, S.E.3.

Queensland

4LE—L. H. Cox, Nutgrove, Cooyar Line, via Toowoomba.
4TC—A. Tremayne, 22 Quarry Street (Aeroglen.), Cairns.

South Australia

5ON—C. J. Othen, 9 Holden St., Hindmarsh.

Western Australia

6SJ—S. J. Smith, 430 Great Eastern Highway, Midland Junction.

Tasmania

7KM—K. G. McCracken, 153 Bathurst St., Hobart.

Territories

1DY—G. E. Delahoy, Heard Island.
1EG—W. J. Storer, Australian Antarctic Continent.

ALTERATIONS

VK—

New South Wales

2CS—Ocean View Parade, Charlestown.
2DW—38 Dargan Street, Yagoona.
2JI—96 Milson Road, Cremorne.
2QL—20 Abbotsford Road, Homebush.
2QM—135 Darley Street, Mona Vale.
2XQ—30 Crebert Street, Mayfield East.
2XR—66 Flinders Street, Cronulla.
2ABQ—211 Barcom Avenue, Darlinghurst.
2AIT—22 Crane Road, Castle Hill, Sydney.
2AVP—Station 42 Kennedy St., Kingston, A.C.T. Postal: Reid House, Canberra, A.C.T.

Victoria

3GP—18 Marara Road, Caulfield.
3JT—Maori Chief Hotel, Cr. Moray and York Streets, South Melbourne.
3PW—Portable station within Victoria; Postal Address: Flat 21, Chatswood Court, 14 Chapel Street, St. Kilda.
3TC—69 Colebrook Street, Brunswick, N.10.
3ZF—Nell Street, Greensborough.
3ACK—Fairway Drive, Mooroopna.
3AGS—33 Alfred Road, Burwood, E.13.
3AMU—Station: 2 Cannes Grove, Beaumaris; Postal: Flat 6, 11 Loch Street, St. Kilda.
3ANL—Nolan Street, Maryborough.
3AVN—43 Forster Street, Norlane.

Queensland

4UJ—71 Rosecliff Street, Highgate Hill, Brisbane.
4WI—Wireless Institute of Australia (Q'land Div.), c/o. J. F. Pickles, 61 Liverpool Road, Clayfield.
4WM—Kennedy Street, Brighton, Sandgate.

South Australia

5DF—Wavell Street, Port Lincoln.
5LL—3 7th Avenue, Trinity Gardens.
5OZ—14 Whistler Avenue, Unley Park.
5PL—P.M.G. Repeater Station, Larrimah, N.T.

Western Australia

6AS—Carnamah.
6EF—29 Lynton Street, Swanbourne.
6EW—28 Brighton Road, West Leederville.

Tasmania

7MG—Swansea.
7MR—Stowport.
7PM—C/o. 7NT Private Bag, Kelso.

DELETIONS

New South Wales: VKs 2EG (now operating under VK1EG), 2OK (now operating under VK3UF).

Victoria: VKs 3AAW (see new entry in additions), 3ADZ (now operating under VK1DY), 3AFB, 3AKQ, 3ASG (now operating under VK2VK), 3AWW (now operating under VK3WL).

FOR MONTH OF DECEMBER, 1953

ADDITIONS

VK—

New South Wales

2AQJ—K. B. Pounsett, No. 38(T) Squadron, R.A.A.F., Richmond.
2ARD—R. J. Smith, Old Bathurst Road, Emu Plains.

Victoria

3AND—N. T. Buchanan, 230 Ascot Vale Road, Ascot Vale.
3ATE—R. W. Tate, Station: 3SH, Lake Boga Road, Swan Hill; Postal: 208 Campbell Street, Swan Hill.
3AVK—V. J. Kitney, 9 Landsborough Street, Ballarat.

Queensland

4FU—Dr. J. K. Fullagar, Medical Superintendent's Residence, Rockhampton Hospital, Rockhampton.

Territories

1AC—A. C. Hawker, Macquarie Island.
1PG—J. H. Gore, Heard Island.

ALTERATIONS

VK—

New South Wales

2CE—11 Wilkinson Lane, Dundas.
2EL—17 Clisdell Avenue, Canterbury.
2MZ—Flat 3, 27 Hawkesbury Rd., Springwood.
2AAF—Beaumont Road, Mt. Kuring-gai.

Victoria

3JE—17 Correa Avenue, Cheltenham, S.22.
3ML—384 Glenferrie Road, Malvern, S.E.4.
3UH—46 Eastgate Street, Oakleigh, S.E.12.
3AAT—Roberts Road, Belmont, Geelong.
3AHG—11 Gleeson Avenue, Burwood.
3ALW—169 Gillies Street, Fairfield, N.20.
3AWB—20 Diamond Street, East Preston.

Queensland

4DR—115 Barclay Street, Deagon.
4HM—39 Hunter Street, Wooloowin, N.2.
4NP—187 Preston Road, Wynnum.

South Australia

5JD—69 Conmurra Avenue, Ackland Gardens.
5LF—2 Olive Avenue, Westbourne Park.

Western Australia

6CK—Care D.C.A. Halls Creek.
6LA—Station: Lot 113, Morgan Street, Port Hedland; Postal: C/o. O.I.C. Dept. Civil Aviation, Port Hedland.
6SP—126 Matheson Road, Belmont.

DELETIONS

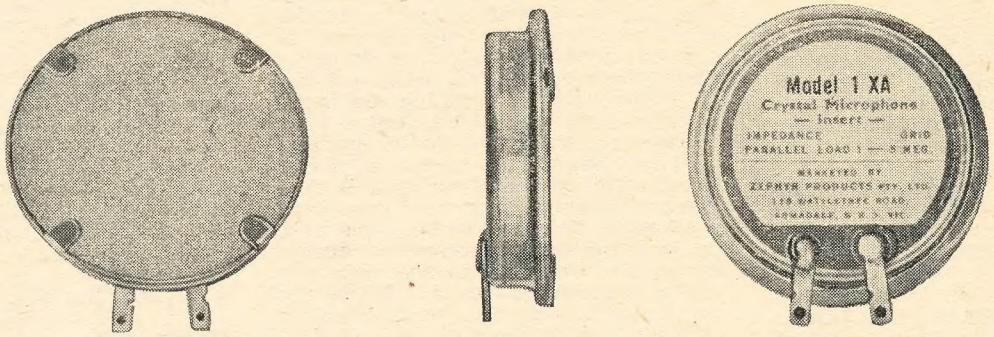
New South Wales: VKs 2NV, 2PG (now operating under VK1PG), 2ZZ, 2ABY, 2AEC.

Victoria: VKs 3ET, 3IB (now operating under VK1AC), 3SJ, 3ABP (now operating under VK2AQJ), 3ACI, 3AIT, 3AND.

South Australia: VKs 5TA (now operating under VK3ATE), 5VL (now operating under VK3AVK).

MODEL "1XA" CRYSTAL MICROPHONE INSERT

AUSTRALIAN MADE — — FOR AUSTRALIAN CONDITIONS



FITTED WITH PLATED REAR SHIELD TO ELIMINATE HUM PICK-UP

- **Patented crystal unit guarantees outstanding efficiency and performance.**
- **Protected against ingress of moisture with approved moisture sealed crystal element.**
- **Small — compact — lightweight — durable.**
- **Will not blast from close speaking.**
- **Precision engineering ensures realistic reproduction and high output with long life and dependable operation.**
- **The only unit available with a genuine sintered metal filter.**
- **Good high frequency response ensures excellent speech reproduction.**
- **Aluminium diaphragm mechanically protected and frequency controlled by "Zephyrfil" filter.**
- **Australian made throughout.**
- **Only carefully selected cements used throughout, to suit Australian climatic conditions.**

TECHNICAL DETAILS

Rochelle salt crystal microphones are perhaps the most widely used for all types of service where quality speech and music reproduction at high output levels is a requirement. They are dependable in performance and when fitted with the appropriate "Zephyrfil" filter, their frequency response may be adjusted to suit any application or requirement.

This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved.

Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

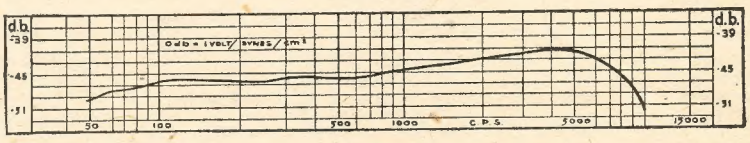
When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case 1½" diameter (rear), ⅜" thickness, 1-13/16" overall diameter (front) with filter fitted.

Frequency Response = 60-6,500 c.p.s.
Output Level = —45 db (0 db = 1 volt/dyne/cm²)
Impedance = Model 1XA Grid 1 — 5 megohms.



Approximate Frequency Response Curve

AVAILABLE FROM ALL LEADING TRADE HOUSES

ZEPHYR PRODUCTS PTY. LTD. 118 WATTLETREE RD., ARMADALE, VICTORIA

A TREATISE ON PRACTICAL MODERN RECORDING TAPE

PART ONE

BY G. W. STEANE

MUCH has been written of late as to the advantages of tape against wire in modern recorders, but now it seems quite clear that tape has won the day as is evident by the almost universal trend of tape sales as compared with wire, and in U.S.A. even the largest manufacturers of recorders, The Webster Company, have cleared their stocks of wire recorders and have launched a big sales campaign in marketing their new tape recorder.

Those of us who have used a wire recorder in the home have almost certainly been faced with the ordeal of joining the wire when it breaks—wire less than 4,000th of an inch thick or about the same size as a human hair—and maybe there are some of us who have had to untangle wire which has caught in the machine itself.

Travelling at a relatively high speed, usually more than 18" per second, which is essential for the reproduction of the higher frequencies, it is quite a mechanical problem to wind the wire evenly on to the spools provided and although the stainless steel wire now used is fairly strong, it is so easy to break same with "birds nests" or wire curlage all over the place.

Even on the best machine, there is no way of avoiding the background noise due to the rotation of the wire which invariably takes place.

One turn of record wire touching the next on the spools tends to leave an echo of surprising strength. This is called "printing" or "echo" and so high can the background be that our leading broadcasting stations no longer use these recorders but have installed professional tape recorders instead.

Present day tapes consist of a non-magnetic base which supplies the necessary mechanical strength, and a coating which supplies the magnetic properties. The base material may be either paper or plastic. Pyral paper base uses a kraft paper of special "construction," approximately 0.0016 inch in thickness. It is supercalendered to achieve a surface which is the utmost in smoothness. By using the proper paper construction, a smooth surface is achieved without using a filler. A filler (a fine powder to fill the pores of a coarse, poorly constructed paper) tends to rub off onto machine parts in unpleasant fashion. If enough binder is added to the paper to hold the filler, the paper is stiffened and curled and the tape will not seat smoothly on the heads. This impairs the high frequency response unless excessive tape tension is used.

Plastic base uses 0.0015 inch thick cellulose acetate. This is an improvement over the German practice, which used an oriented (stretched) vinyl material that would tend to wrinkle and shrivel up if overheated. This could easily happen in the back of a closed car in the summer sun. Plastic base is much smoother and somewhat more uniform in thickness than is paper base. Hence the resulting tape has less background noise, less modulation noise, and lower distortion.

It's nice to hear from Geoff Steane after so many years. He was one of the original members of the Victorian Division of the W.I.A. going back to the spark days when we had the spark transmitter rigged up in our Chapel Street, Prahran, days, and since then he has been in almost every phase of radio. Most of his time was on sound-systems and valves, but he originally started the W.I.A. A.O.C.P. construction classes as theoretical instructor with VK3BQ on the practical side.

He has recently been studying T.V. at the Sydney University and in the meantime has been importing Magnetic Tape from France, which accounts for his extraordinary interest in this line.

Black oxide has a higher coercivity than red and in the French tape it can show up to 320 oersteds, whereas red tape ranges around 280 oersteds.

Black oxide is recommended for tape speeds of under $7\frac{1}{2}$" per/sec. and will operate successfully on speech with tape speeds as low as $1\frac{7}{8}$" per/sec.

Continental tape manufacturers differentiate on red and black in this way whereas the Americans seem to use red tape for all speeds.

Black tape is, of course, harder to erase than red and the improvement in high frequency response is not apparent apart from any highly specialised applications.

The binder is a tough, flexible combination of synthetic resins, used to hold the oxide to the base. Since tape may be stored tightly wound on reels for long periods, there must be no tendency for one layer of tape to stick to the next. At the same time, the binder must not be made so hard that the tape is made stiff—for then it would not seat well on the heads, and the high frequency response would be impaired.

The coefficient of friction between the binder and metal must be low, otherwise the tape will not move smoothly over the heads—leading to flutter and to squeal. This must be achieved in the material itself and not by applying a lubricant afterwards, for lubricant will rub off and foul the heads and sometimes the capstan. The anti-friction quality must be an integral part of the formula.

Just to make the problem of the formulator more difficult, all these properties must be achieved without injury to the toughness and strength of the binder, and without causing it to curl. A weak binder will rub off onto the heads very rapidly. Tape which has curled will not lie flat on the heads without excessive tension, and the high frequency response will be impaired.

For uniform quality from one foot of tape to the next, the oxide and the binder must be completely mixed—an operation known as dispersion. The French tape coating is dispersed for many hours in large mills, each weighing more than an automobile. Poor dispersion would increase modulation noise, as well as impair uniformity. The various ingredients are introduced into the mills according to a carefully developed sequence, then milled. A small amount is withdrawn from the mill and test-coated. If the test coat shows satisfactory dispersion, the mill contents are released for production use.

Modern tape has a ferric-oxide coating on one side of either plastic or paper base. This coating is made very thin, about 0.0006 inch, and is usually $\frac{1}{4}$" in width, which gives a tensile strength of about 5 lbs. which is more than sufficient to stand up to even the poorest tape recorder. It is much easier to drive tape at an exact speed and there is no necessity to arrange for the magnetic head to move backwards and forwards as in a wire recorder. We might add that in the case of the latter, it is quite a problem to produce a wire head which will stand up to the cutting effect by the friction of the wire which saws its way through the softer pole-pieces of same, whereas in the case of the tape it is generally accepted that a pressure of one oz. across the gap of the head is sufficient to prevent flutter and the wear of the head and tape is negligible.

Several types of magnetic tape have appeared on the Australian market of late months, each with their own technical characteristics and for the connoisseur it is rather important that the frequency response, mechanical strength and output is examined as there is quite a variation in laboratory tests. Some agents for these tapes give information on all these factors and may be this article will enlighten many readers on same.

However, on account of dollar restrictions, American tape is now off the market with the exception of a few samples, so that it may be of interest to readers to note that one of the leading manufacturers of tape recorders in U.S.A. openly advertise that their tape can withstand 57,000,000 replays before the output drops 5 per cent which, in itself, gives our readers some idea of the durability of tape generally. We presume of course that this colossal figure can only be expected when tape is lifted free from the magnetic head on fast rewind, which is usual with most reliable recorders.

(Continued next issue)

ANTARCTICA

AND this is the day! Long months of preparations, thousands of hours of special training have gone past; numerous preliminary tests, careful planning of instrumentation and research are over. Melbourne, the 4th of January, 1954—a farewell speech by the Minister for External Affairs, Mr. Casey, a last hand-shake, and the Kista Dan, the Danish exploration ship chartered by the Federal Government, sails for the seventh continent—Antarctica.

Aboard is a team of well chosen men whose aim is the establishment of a scientific research observatory in the Australian sector of that vast, wide-open land down south. Besides permanetly planting the Australian flag there on icy ground, this means that scientific data of great importance will, in future, be available for the benefit of Australia, of mankind in general, in fact of future generations!

Let us recall that the whole continent covers an area of approximately 5,000,000 square miles.

Its chief feature is the great barrier of mountains and ice at its outer rim at points climbing to a height of 15,500 ft. An ice sheet about 2,000 ft. thick covers a plateau inside this barrier. Ther is a volcano, Mt. Erebus (13,202 ft.), on Ross Island. The vast Antarctic land is surrounded by the Antarctic Ocean whose main seas are Weddell Sea, Biscoe Sea, and Ross Sea. Animal life is restricted to a few birds, mostly penguins. Other animals are seals and cetaceans. Lichen and mosses form the flora.

The climate of the colossal block of ice is rather unfriendly. Extreme values of air temperature are —18°F. and +32°F. The yearly mean temperature is approximately +12°F. Terrific snowstorms and gales are likely to blow any time during the year. Sunshine is a rarity.

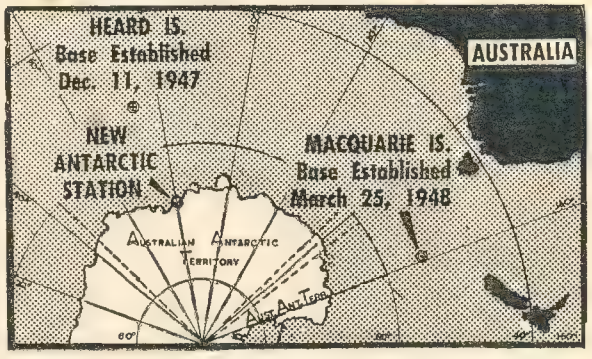
Long is the chain of south-polar expeditions beginning with Capt. James Cook in 1774. To mention only a few others: Ross 1839/43, Scott 1901, von Drygalski 1901/03, Shackleton 1908/14, Byrd 1928, Sir Hubert Wilkins 1928/29, Sir Douglas Mawson 1929, and the recent French Adelie Land Expedition (1948/51). Establishment and continuous operation of two permanent sub-Antarctic stations, at Heard and Macquarie Islands (since 1947/48), have also been a major contribution to Antarctic research.

Almost half of the wide area (2,472,000 square miles) is Australian territory. The coastal district between 60° and 75° East longitude is called MacRobertson Land. This is the place the expedition anticipates to set foot on. Sir Douglas Mawson landed here with his team in 1929. He named the land after MacPherson Robertson who had helped to finance his trip. Although the main object of this 1954 Australian expedition is finding a suitable base and the establishment of a permanent research station and thus laying the foundation for large-scale investigations in years to come, its scientific programme is of considerable extent, and includes work in meteorology, geology, surveying, biology, and geophysics. It is obvious that both official and Ham Radio communication back to this country and with other parts of the world will supply data which should be of great interest for ionospheric research. The ten men undertaking this work on the cold continent are a literally hand-picked team of experienced explorers, most of them Antarctic or sub-Antarctic veterans.

Leader of the expedition, as well as its surveyor, is Robert Dovers; others are the French observer Georges Schwartz, technical superintendent and senior wireless operator L. E. Macey, medical officer Dr. R. O. Summers, meteorologist W. J. R. Dingle, geologist B. Stinnear, engineer John Russel, wireless operator and postmaster Bill Storer (**VK1EG**), carpenter W. Harvey, and cook J. G. Gleadell.

BY HANS J. ALBRECHT, VK3AHH

When the Kista Dan has arrived at the coast of the continent, the most difficult work will begin for the party—that of finding a satisfactory base. Reconnaissance of the mainland is of vital importance and will be cared for by two R.A.A.F. Auster aircraft fitted with floats and skis. The establishment of the station will be supervised by Mr. P. G. Law, Director of the Antarctic Division of the Department for External Affairs.



Region of Australian Antarctic Research. (Southern Magnetic Pole at 71° 10′ S. and 150° 45′ E.)

The expedition camp will consist of several huts, their construction and outfit being the result of numerous experiments by the Antarctic Division and also of long-time experiences of other explorations. Some of these huts are of a prefabricated type specially designed for this purpose. The Antarctic village to be set up in MacRobertson Land will provide the necessary accommodation for men and apparatus and is intended to be the base for investigations in the hinterland. The camp's electric power will be supplied by two diesel electric generators of 15 kva. each.

The wireless station will obviously be located in the camp. Two R.A.A.F. type AT20M transmitters constitute the main transmitting equipment. Their coverage is 2 to 20 Mc. The final p.a. contains four 813s in parallel with a plate voltage of 1,600 volts supplied by the separate power supply using 866s. The modulator houses 813s and the output is rated at 500 to 750 watts, fed to an inverted vee antenna (70 ft. high at the apex). Two AR7s and a National X100A form the receiving set-up. The latter belonged to Sir Hubert Wilkins' expedition, which may be regarded as a good omen for successful radio communication to this country! An AT5/AR8 system (powered from either batteries or AC power supply) as emergency equipment will be stored in a separate hut.

Meteorological elements to be measured are the same as at any weather station of this kind, i.e. temperature of air and ground, barometric pressure, wind, humidity, all on the ground as well as in upper regions (by radiosonde ascents), in addition to observations on clouds and snow conditions. Instruments used are principally the equivalent to those in ordinary, lower latitudes, although they are types specially designed for Antarctic use. As is usual practice, values of observations are daily sent by radio to this country for evaluation. Besides special instruments of entirely new design are to be utilised for meteorological radiation research.

The party's medical officer has at his disposal a surgery complete with a blood transfusion unit, operating and a portable X-ray equipment.

Although the main tasks of the expedition are research, investigations to add another contribution to the great mosaic work of knowledge on Antarctica, it must never be forgotten that these volunteers, these energetic men, keen to be pioneers of science, have to live for a whole year under conditions not comparable with those back home. It is for this reason that the authorities concerned did everything humanly possible to bring some civilisation to their village on Antarctic ground. Thus there are recreation quarters with a library, radiogram, chess, table tennis sets, etc. It is obvious that all huts with the exception of the stores are electrically heated.

Ham Radio may be listed as a means to keep these men in touch with the civilised world. Bill (ex-VK1BS in 1951) will operate under his Antarctic call sign VK1EG. His equipment will be a modified AT5 and a Hammerlund receiver. He intends to use c.w. and also phone, if signals are strong enough.

A considerable section of the expedition's programme is headed "field investigations. Here again special well proved equipment will be used. First, there are three tracked snow vehicles, so-called "weasels." Their excellent Antarctic performance had been demonstrated by the French Adelie Land expedition. A weasel contains special navigation instruments, an astro-compass, and a portable transceiver of type SC694C (U.S.). The frequency range is approximately 3.6 to 6 Mc. A 2E22 and miniature tubes constitute the line-up. The set is powered by a pedal generator or a

vibrator unit. The antenna is a whip or a long wire.

Sledges hauled by huskies are the traditional snow vehicles used on Arctic and Antarctic expeditions, and thus similar sledges will be used by this expedition, too. They are also equipped with radio communication, being an ex-R.A.A.F. set, Gibson Girl, converted to a two-channel rig (5.4 and 5.5 Mc.) and powered by a hand-crank generator. The receiver is a MCR1 covering 550 Kc. to 15 Mc. (battery). Specially designed "caravans" wil be used in connection with the weasels.

While biological, geological, and geophysical research and surveying carried out by the expedition will assist the completion of an over-all scientific picture of Antarctica, meteorological observations taken should invaluably contribute to an improvement in this country's weather forecasting. All cold air masses reaching Australia originate at the south-polar region. So far the number of weather stations between there and here has not been and cannot be sufficient for a complete knowledge of those air masses, which, however, is vital for accurate forecasts. The establishment of the new station will certainly better this position greatly, not only by adding another station, but particularly by its location very close to the origin of those cold air masses.

This article would be incomplete without a discussion of the prospects of communication with MacRobertson Land. It must, however, be said that a prediction can hardly be made because not enough practical data is available. Signals originating at or passing through Arctic and Antarctic regions can be affected by severe disturbances caused by ionospheric and magnetic storms which are more frequent in those areas of high latitudes. In fact, the two zones of extensive auroral activity are a good indication for the expansion of these disturbed regions. A type of turbulence often exists among ionospheric layers there, causing a radio wave to be reflected irregularly. This becomes evident by a "flutter" fading, a familiar sound on signals passing through these areas, e.g. short-path contacts between Australia and the eastern part of South America (LU and PY). As a more detailed discussion would be beyond the scope of this article, we can confine ourselves to stating that MacRobertson Land may be just inside or just outside the southern auroral zone. Future will show how strong signals will be and how they will sound! After all, VK1EG is one of us, and thus however keen DXers in all corners of the globe may be to work that new DX country down south, we shall certainly be just a bit keener to contact Bill!

TRADE REVIEW

Eddystone "700" Communications Receiver

BRIEF SPECIFICATIONS

Frequency Coverage

Ten ranges as follows, selected with a low capacity rotary switch:—

Range 1—	14 Mc.	to	31 Mc.
„ 2—	8 „	„	14 „
„ 3—	3.8 „	„	8 „
„ 4—	1.5 „	„	3.8 „
„ 5—	600 Kc.	„	1500 Kc.
„ 6—	240 „	„	600 „
„ 7—	92 „	„	240 „
„ 8—	48 „	„	92 „
„ 9—	26 „	„	48 „
„ 10—	15 „	„	26 „

Valve Sequence

V1—R.F. Amplifier 6BA6 (CV454)
V2—R.F. Amplifier 6BA6 (CV454)
V3—Mixer 6BE6 (CV453)
V4—Oscillator 6AU6 (CV2524)
V5—Beat Freq. Osc. .. 6AU6 (CV2524)
V6—I.F. Amplifier 6BA6 (CV454)
V7—I.F. Amplifier 6BA6 (CV454)
V8—A.G.C. Amplifier .. 6BA6 (CV454)
V9—Det. & 1st Audio 6AT6 (CV452)
V10—Push-Pull Driver 12AU7 (CV491)
V11} Push-Pull Output 6AM5 (CV136)
V12}
V13—A.G.C. Rec. & Mut. 6AL5 (CV140)
V14—Voltage Stabil. VR150/30 (CV126)
V15—Power Rect. 5Z4G (CV1863)

I.F. Stages

The two I.F. stages operate on 465 Kc. on Ranges 1, 2, 3, 4, 5, and 7, and are switched to 110 Kc. on Ranges 6, 8, 9 and 10. Four degrees of selectivity, one of which incorporates a crystal filter.

Input Impedance

Above 4 Mc.—72 ohms unbalanced. Below 4 Mc.—Equivalent to a 400 pF. capacitor in series with a 12 ohm resistor, to match into a random long wire aerial.

Output Impedance and Response

A small monitor speaker is fitted internally. On the front panel are two telephone jacks, one for the connection of an external 2.5 ohm loudspeaker, the other for telephones. Maximum output is 2.5 watts into 2.5 ohms. The response is level within 4 db from 50 to 10,000 c.p.s.

Sensitivity

For a 15 db signal-to-noise ratio and 50 milliwatts output:—
Above 100 Kc.—2 to 5 microvolts.
Below 100 Kc.—5 to 10 microvolts.

Image Discrimination

At least 25 db down at the highest frequency and considerably greater at other frequencies.

Automatic Gain Control

The A.G.C. amplifier (V8) enables an excellent characteristic to be obtained. The audio output varies by not more than 3 db for an increase of 80 db input, above 5 microvolts.

Power Supply

AC mains, 110 or 200/240 volts, 40/60 cycles. Total consumption 90 watts. Protecting fuses fitted.

Tuning Drive and Scale

The two-speed geared drive has reduction ratios of 125 to 1 and 25 to 1 operation, being smooth and positive. The 16-inch scale is calibrated in frequency on all ranges to a high degree of accuracy. At the top centre of the main dial is an auxiliary bandspread scale which gives an effective length of 160 inches per range. The dial is well illuminated by tubular lamps.

Special Features

The B.F.O. is switched according to the intermediate frequency and is very stable.

The Meter on the panel can be switched to check the current reading for each of the valves. In one position, it acts as a tuning indicator.

Construction

The front panel and the coil box are strong alloy diecastings, other units being steel or brass of heavy gauge. All metal parts are well finished and protected against rust or corrosion. Components and materials throughout are of the highest quality and the receiver is suitable for use in tropical cilmates.

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* Response includes Correction due to Negative Feedback. ** For use with Rola 12-OX Speaker.

Type and Mounting	Impedance—Ohms Primary	Impedance—Ohms Secondary	Freq. Response DB±	Freq. Response C.P.S.	Rating Watts	Typical Application	Price
894-23	500	2, 3.7, 8, 12.5	2	50-10,000	5	Line to Voice Coil	16/-
900-22	2,500, 5,000	2, 3.7, 8, 12.5, 15	1	*40-15,000	15	Single 807, EL34, etc., to V.C.	57/6
896-9	8,000, 10,000	2, 3.7, 8, 12.5, 15	1	30-15,000	15	P.P. 6V6Gs, A or AB1 to V.C.	62/6
897-9	8,000, 10,000	100, 125, 166, 250, 500	1	30-15,000	15	P.P. 6V6Gs, A or AB1 to Line	62/6
763-9	3,000, 5,000	2, 3.7, 8, 12.5, 15	1	40-20,000	15	P.P. 2A3s, A or AB1 to V.C.	62/6
809-26	500	2, 3.7, 8, 12.5, 15	1	50-20,000	15	Line to Voice Coil	42/6
870-26	10,000	2 or 8	1	*20-20,000	**6	P.P. 6V6Gs or 807s as Triodes	57/6
871-9	10,000	2 or 8	1	*20-20,000	12	P.P. 6V6Gs or 807s as Triodes	81/-
872-9	10,000	3.7 or 15	1	*20-20,000	12	P.P. 6V6Gs or 807s as Triodes	81/-
891-22	6,600	83, 100, 125, 166, 250, 500	1	50-12,000	35	P.P. 807s, AB1 to Line	82/6
892-22	3,200	50, 62, 83, 125, 250, 500	1	50-12,000	55	P.P. 807s, AB2 to Line	97/-

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FIFTY MEGACYCLES AND ABOVE

FIJI TO AUSTRALIA ON 50 Mc.

VK2WH contacted VR2CB at approx. 1025 a.m. on 30th Dec. The band remained open until the early afternoon and VR2CB and VR2CG were both contacted by a number of VKs mainly in the south eastern States. In due course, VR2 was heard in VK6 and vice versa; no QSO as yet but very encouraging. VK2WH was the first DX contact made from Fiji on 6 metres.

V.H.F. CONTEST LOGS

Please send in your log for the 1953-4 Ross A. Hull V.h.f. Contest. Don't delay, do it now! Logs to be in hands of Federal Contest Committee, Box 1734, G.P.O., Sydney, not later than 24th Feb., 1954. Page 10, December issue "A.R." for rules and scoring.

NEW SOUTH WALES

This month we have much news of 50 Mc. activity, the band being open to all States, VR2 and ZL. On the 30th December, at 11 a.m., VR2CB was QSOed by VKs 2ADT, 2WH, 2AZN, 2HO, and 2VW. There may have been others we did not hear of. Later up came VR2CG and he was also worked by many VKs.

The Ross Hull Contest has been most successfully concluded, and it's going to be interesting to see who out of VKs 6BO, 4BT, 4NG and 5MT will take it away. Signals in Sydney have never been so good on six before from ZL as this season. Signals on New Year's Day were heard as early as 5.45 a.m. in Sydney, and by 9 a.m. no less than 20 different stations were worked.

A visitor to Sydney, Dudley 2DQ, says that he hears Sydney stations in the winter time up at Broken Hill, but they won't have a look around the band; now chaps have a look for 2DQ on 50.45 Mc., usually around 7.30 p.m. Dudley visited many shacks in Sydney and we hope he enjoyed his stay.

On 144 Mc. there have been many openings, but not so many taking advantage of them. 2AJZ, 2ANF and 2WH have been in contact with 2GU in Canberra and signals both ways are reported as S8. The Newcastle boys have been heard on and off, Max 2OT being on the ball most times. 2QW's QTH is now Homebush, hope to hear him soon. 2ABR has shifted his QTH to East Hills, hope it's tops Bill. Alf 2CE has moved to Dundas, and by his signal strength it is a better QTH; good luck Alf. Alan 2ACC has had many contacts with Newcastle, congrats OM. 2ABO tells us that there are eight Wollongong chaps ready to go on 144 Mc., if they can get some help; how about it chaps?

We were pleased to hear Wal 2EW come up on 144 Mc. with a very good signal. John 2ATO has gone walkabout up to Barrington tops (what no gear John). 2QZ and 2OA have been away, hope to hear you on again soon.

The winners of the Fox Hunt held on 13th Dec., were 2HL and 2AJZ in first place, 2OA and 2WJ in second place. This event is most popular, and usually has a good turn up. We hear that 2LG and 2ABE ended up at Heathcote! They started at Woodville Road, and finished up at the head of Georges River, where a picnic lunch and get together concluded the day. One Ham was heard to sing "give us another one do!" 2ANF and Ezz Griffiths were the Fox, and did a good job.

2XX and 2OT were experimenting with antennae the other night, and ended up working each other on four feet of string that had been soaked in salt water, signals between Newcastle and Sydney must have been good, signal reports were S4 to 5 each way. We welcome 2ARD of Emu Plains to the 144 Mc. band and wish him success; John has been worked in Sydney at S7 to 8, good work OM. 2AGT has now got his converter going and can hear 2KS now! 2ADY mobile in Sydney QSOed 2ADT in Newcastle, not bad going eh!

The winner of the Scramble, held on 23rd Dec., was Cliff 2LG with 18 points, Ezz 2ADY/M 16, and 2HL and 2APQ (Horrie and Perce) 13. Congrats to all. There were 20 stations on and a good hour was had by all.

Tests on 144 Mc. have been carried out between VK6 and Sydney during the 6 mx openings, but no results as yet, but it will come. 2APQ and 2KS have developed 144 Mc. duplex working and say they have it to a fine art now. They use vertical and horizontal polarisation to facilitate this. John 2ANF says that he will be on two when business permits; John is very busy.

The 576 Mc. band is dead, but a lot of thought has been given to revive it soon.

VICTORIA

Six mx openings provide the main news, with the break-through to VR2 of special interest. First in VK3 to contact Fiji was 3IM who made it with VR2CB at about 11 a.m. on the 30th December. The band remained open long enough for a good number to participate. During the period of the popular Ross Hull V.h.f. Memorial Contest, excellent conditions occurred, with all VK active call areas, VK9, ZL1, 2, 3 and 4, and VR2 being contacted from VK3. It is generally agreed that conditions were as good, if not better, than any experienced here so far. The opening on the 31st included a period from about 2 p.m. until late in the evening when all ZL districts came through with very good strength. VK4 was well represented, at least 14 stations being active at the time there.

The first 2 mx mobile fox hunt is to be held on the evening of Wednesday, 10th February. Can you have a mobile set-up going by then? The object is to locate a target mobile station which will be touring the suburbs.

V.h.f. meetings are held on the third Wednesday of the month at the Institute rooms, 191 Queen Street; the next being on the 17th at 8 p.m. If you are active on any v.h.f. band or just interested in the v.h.f's. you are welcome to attend.

The next v.h.f. field day will be on the 14th February, which coincides with the National Field Day.—3ABA.

288 Mc.: This band is becoming more popular this year and new calls will possibly be heard. Those known to have either complete gear or gear under construction include 3ED, 3QO, 3ZT, 3AAF, 3AFJ, 3AHN, 3AHC, 3AHS, 3ALK, 3ALD, 3ATK and 3AUX. 3PO has dismantled his gear in disgust, but will possibly make a comeback late in the year. 3ALQ is contemplating trying the band as is 3XP. Mod. osc. appear the order of the day, although 3AFJ is using an m.o.p.a. job consisting of a pair of 7193s driving an 832. 3AFJ would like to hear from anybody else planning activity on this band. 3AHC is planning to operate mobile marine at an early date, and in this regard would like to know of any activity in the Geelong area.

SOUTH AUSTRALIA

There has been much activity on 50 Mc. during the past couple of months and the results have paid off with some very good DX with VK9, VR2 and ZL added to the list. The 21 Mc. band has been giving short skip contacts at the same time as the 6 mx contacts. It has been suggested that the V.h.f. Contest in this State be changed to an award to the operator who has a two-way contact over the greatest distance for each year or season—any other ideas chaps? The present form is apparently, even with the easy conditions, not acceptable to the VK5 gang. The award this year goes to 5PS—Warwick went to the trouble of building up a 288 Mc. rig just to be on the band and his trophy is a double tetrode tube for v.h.f. operation very generously donated by Philips Industries—vive le grande!

Had a ring from Tom 5TL who was paying a flying visit to Adelaide, the outcome of which should be a "City Slicker" on 2 mx coupled to a converted 522. Hughie 5BC has a 16 el. ready to fire with the necessary, and together with Harry 5KW also on the air there, should be a very good chance of running a link right along the Murray Valley. Bill 3AJU, at Red Cliffs asking for contacts chaps, so it looks like some worthwhile DX.

What a gathering of v.h.f. addicts at a certain commercial enterprise in Angus Street! Nice work Max, and very best wishes from us all—the latest recruit, Jack 5JD, our worthy Federal Councillor for 1954. Clem, you will need all your quick talk now! What do you do in VK5 when the taxi services in VK4 and VK2 interfere, Max?

Haven't heard a word about the Adelaide Plains and their 1 mx activity. My usual sources of information, Bob 5PU and Roy 5BT, apparently are lying low to hatch out a few more technical tricks. What about it chaps—perhaps 576 Mc. is a little more active!

Had a visit from associate Brian Jellett, who resides near Narracoorte and hopes to sit for his ticket this year; he is interested in 2 mx work besides fire control work, so the Mount Gambierites won't be so isolated after all—any news boys? I'll be accused of padding this!!

5MK, 5ZL, 5MT, 5JO (been to VK3 and back—enough said!), 5MD and others (but not me) been active on 6 mx and very smug about the DX.

Has anyone used their 6 mx beam for 2 mx work yet—if not why not? I'll tell you later if it works, because I have just repaired mine after the storm!—5XU.

20th A.R.R.L. INTERNATIONAL DX COMPETITION

Phone: Feb. 12-14 and March 12-14
C.W.: Feb. 26-28 and March 26-28

Due to lack of available space for the somewhat lengthy rules of this popular Contest, readers who desire to compete are asked to contact the Secretary in each Division who will be supplied with copies from the Federal Executive. Many Australian Amateurs subscribe to "QST" and the full rules will be found in January, 1954, issue of that journal.

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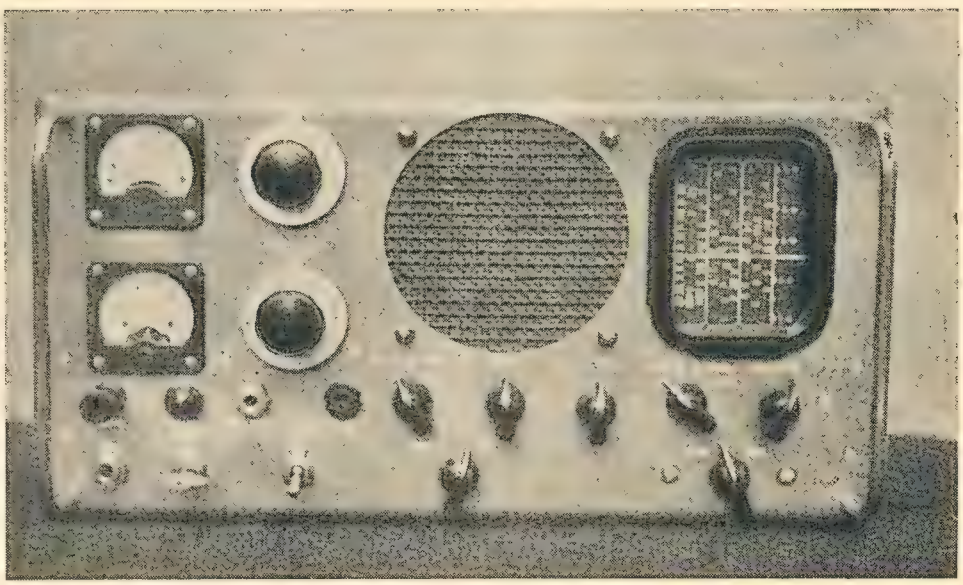

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DX ACTIVITY BY VK3AHH*

DX HIGHLIGHTS

All who missed CE0AA a few months ago will have another chance to work **Easter Island: CE0AC** (phone) and **CE0AD** (c.w. and phone) expect to commence operation on the 20th January. Let us hope that more than seven VKs are lucky this time! (thanks 3CX).

There is hope for new activity from **Niue Island.** Probable call sign is ZK2AC (thanks BERS195).

All being well, **Bill Storer, VK1EG** (ex-1BS, 2EG), wireless operator of the expedition to **Antarctica**, should begin operation towards the end of February.

BAND CONDITIONS

3.5 Mc.: This band provided fair to good signals from Europe and U.S.A. The mid-summer noise does not help matters, but nevertheless propagation conditions were found to be reasonably regular. Times for Europe were 1800-1940z (with an apparent peak around 1920z) and for North America and the Pacific Islands 0900-1400z.

Two s.w.l. reports from the young Jenkin brothers of Box Hill, Vic., are at hand: **Dick Jenkin**—DU7SV (1035z); **Dave Jenkin**—W7MRG. **3AHH** lists W*, G6GN, DL4OS, HB9EU, and others with relatively weak signals.

7 Mc.: This band has also been affected by atmospheric noise, which naturally reduces the chances of working DX. However, openings to the African continent are reported between 1400 and 1900z. European signals were not very strong this month. Short-path contacts were predominant (1700-2000z). W, Far East, and Pacific Islands were workable, if active, during 0600-1500z. Sometimes W broke through via the long route (1900-2000z).

Considering W* contacts as normal, these are this month's reports: **2QL** is feeling happy in his new QTH which allows Frank to work and hear much more DX than the previous one. Here is Frank's list: HB9LO*, DL1MK*, and FA3FM, OQ0DZ, CN2CS, CN8FL, SU1SS, 3V8AN, VQ4AQ, VQ3EO, common Europeans as heard. Laurie **2AMB** logged CT1SS*, MP4BBD*, SU1SS*, VS1FE and Europeans heard. Ivor **3XB** worked KC6AF*. Fred **3YS** adds ZK1AB*, and Don **3ALQ** reports a phone contact with KH6ABX*. 3WQ said that **3ARV** worked DU7SV* and MP4BBD*. Don **6HK** QSOed PA0RC*, ZS6CH*, ZS2X*, VE7EH* and SM5CO*. This month's s.w.l. reports are **BERS195:** DU7SV KP4KD, MP4BAF, KV4AA, VQ4AQ, SM8AJW (off VU); **Dick Jenkin:** CT1QF (phone), DU7SV, **Dave Jenkin:** VR2CW, DU7SV, SM8ER.

14 Mc.: Although conditions were not very steady during December, many African and South American contacts are reported. South Africa was workable between 0500 and 0830z and around 1300-1900z, the latter period with general African conditions. Openings to South and Central America occurred between 0800 and 1400z, while Europe, the Middle East and the Mediterranean area were well represented by a number of stations (0700-1700z). W was best workable over the long route. Conditions this month were as a rule not very reliable.

Remembering that ordinary European contacts as well as those with W and the Pacific Islands count as usual, we have on c.w.—Chas **1AC** with LU*, KV4* and KR6*. **2QL** presents ZS's*, CE*, LU*, IS1FIC*, XZ2OM*, FI8AE*, 4X4*, LU4ZI*, VQ4HJP*, and CX1BZ, HH2FL, CM9, KV4, ZC3AB, KP4, C3BF, YK1AB, CP3CB, ET2NG, SV0WE, XW8AA, FI8AP, OD5XX, HS3CA; followed by another good list from Noel **2AHH:** JZ0KF*, ZS's*, SU1SS*, SV0WE*, OA4BR*, CN8BJ*, LX1AS*, 4S7AP* and 4X4BA*. **2AMB** adds GI4RY*, JZ0KF*, ZS's, 5A4TG. **3CX** has again provided an excellent collection with ET2NG*, KJ6AY*, C3BF*, OD5XX*, KV4*, ZK1BI*, XW8AA*, KA0IJ*, ZC5VS*, TI2TG*, DU1CV*, 5A2TG*, and CR6AI, ZC3AB, AC4NC, CR6AJ. Alan has now worked 182 countries. Jack **3JJ** has also been quite active, proved by ZC5VS*, ET2NG*, ZS's*, PY5TH*, LU3EL*, LU4AAN*, PY2CK*, LU8EN*, LU8FBH*, LU3GN*, LU5AQ*, LU7DJF*, LU2GB*, LU4ZO*; while Fred **3YS** QSOed C3BF*, YI2AM*, JZ0KF*, FI8AE*, VU2CQ*. Lin **3ANJ** reports VQ4DV*, FA9VN*, 4X4FQ*, and FU8AD*. Up in Queensland, Bob **4RW** keyed with TI2TG*, ZS*, FQ8AK*, CR6AI*, EI4Q*, LU5AQ*, ST2AR*, FN8AD*, YI2AM*, CE3AD*, KV4BB*, ET2NG*. Les **4XJ** managed JZ0KF*, FI8AR*, VR4AE*, XZ2OM*, ZC4FB*, VS1FX*, and FO8AC, XW8AA. Rob **5RG** mentions JZ0KF*, KV4*, VS1*, XZ2OM*; and Austin **5WO** worked VU2GB*, FI8AE*, KV4*, ZS's*, GI4RY*, 9S4AX*. From the far west we have Jim **6RU** with FN8AD*, FI8AE*, JZ0KF*, 5A4TA*, ZS's*, FK8AE*; while up in New Guinea, Alan **9YY** QSOed CP1BX*, I5LV*. VR4AE*, 4X4BA*, GI4RY*, LU9AF*, VR2AS*, CE3AG*, VR2BZ*, VS1GA*, VS1GB*. This month's s.w.l. list is headed as usual by Eric **BERS195:** AP5T, CE3AG, CR9AF, CE4BX (at 0315z), ET2NG, FI8s, FK8s, HP1AT, HR1AT, OD5XX, OQ5VN, OQ0DZ, MP4BBL, OA4DX, LU5AQ, JZ0KF, PY2CK, XZ2OM, YK1AH, ZC3AB, VR2BZ, SM8LS (off ZB2). **Dick Jenkin** heard DU1MB, FN8AD, 5A4TH, FI8AE; **Dave Jenkin:** LU6TQ, YN1AA, ET2NG, KV4, CE4BX. FI8AP, GI4RY, KL7FAI, FO8AC, JZ0KF, VU2DF, FK8, HS1DD, HS3CA, VS1, LU4AAN, ZS's, EI4X. Here at **3AHH** the log shows YV5DE*, KP4JE*, FN8AD*, FI8AE*, FI8AT*, YI2AM*, CP1BX*, HK3FF*, TI2TG*, ZC5VM*, JZ0KF*, OA4ED* and HK1TH, AP2K, PY1TD, ET2NG, ST2HK, HR1AT, OD5LX, MP4BBL, CE4BX, PY2CK, 5A1TZ.

This month's **phone** reports are—**2AHH:** FO8AC*, HC1FS*, CE3QJ*, YI2AM*, LU7CD*, CE3II*, PY5DP*, PK2SB*, ZE6JA*, ZS's*, ZE2JE*, ZE3JY*, VQ4EU*, VQ5EK*; and Hans **2AOU** mentions LU6AJ, ET2PA, ZE6JA, ZS's. Stan **3TE** QSOed DI9AA*, ZS's*, FO8AC*, HS1WR*, KC6AA*, KG4AN*, MD5DO*, VQ3RJB*, VQ4AC*, VS1s*, CN8FX*, YI2AM*, YV5BQ*, YV5FK*, ZC4RY*, ZC5VM*, 3A2AM*; followed by Rex **3UR** who reports ZS's*, YI2AM*, FK8AB*, HS1WR*, XZ2KN*, LU9EN*, HZ1TA*, VU2EJ*. **3XB** managed QSOs with ZS*. Ray **3ATN** spoke to CS3AC*, AC4NC*, MP4ABW*, VP2DL*, I5SG*, SV0WJ*, YI2AM*, CR9AH*, XW8AA*, ST2NW*, CP5AB*, VQ4NZK*, VQ8AL*, HC2OS*, ZP5GF*, OA4DI*, CR7AU*, ZC4RX*, ZS's*, XZ*, CM*, YV*, KV4*, ET2*, HZ*, PY*, LU*, CN8*, ZE*, 5A2*, VP6*, 4X4*, KZ5*. Cliff **3AXR** worked ZC5SF* and heard KT1WX, OY2Z. **4RW** reports AC4NC*, VU2RC*, VS1*, CP5AB*, FK8AB*, VR2BJ*, VR4AE*. John **4RT** QSOed ZC5SF*, KA0IJ*, while Aussie **4TN** lists ZS's*, ZE6JA*, HP3FL*, KZ5HC/MM*, CP5AB*, CN8MM*, ZC5VR*, XW8AA*, HP3DA*. John **5JW** mentions ZS's*, ZE2JE*, ZE1JX*, and **5RG** logged ZE2JE*, ZS*; followed by Austin **5WO** with ZS*. **6HK** was lucky in contacting PK2SB*, and Keith **6KE** spoke to a long series of ZS's*, ZE2KP*, VS1*, ZE6JA*, while **6RU** adds 9S4AX*, I5RM*, YI2AM*, TF5SV. This month's Tasmanian representative is Doug **7DZ** with LU5XE*, KV4*, ET2MK*, PY5DP*, MP4KAC*, XW8AA*, ZC5SF*. Finally here are the s.w.l's—**BERS195:** VQ3RJB, VQ4AC, YI2AM; **Norman Clarke:** VU2CR, ZE5GS, VS3RM, XZ2KM, LU9ABC, LU7DI, VS1, ZS's, CP5AB; **Dick Jenkin:** ET2PA, ZS's, ZE2JE, VS2, ZC5SF, HZ1AB, KC6AA, XZ2KN.

21 Mc.: As usual, this band displayed erratic conditions to all continents. American openings were likely between 2200 and 0300z and sometimes Europe came through around 0900-1100z with Africa from about 0500 to 1000z.

2AHH worked VS1ES*, DU7SV*; and Quentin **3IM** reports VU2EH*, VS1ES*, KA5RC*, KH6AIO*. Percy 3PA mentions KJ6AY*, HC1FS*, VU2AT*, S2AT*, ZE2JE, VQ4RF, ZK2AA*, 4S7LB*, KR6AA*, SM*, F*, GM*. **4RT** spoke to VU2CQ*, CT1FT*, ZB1BU*, YI3WH*, VS2CP*, VU2EH*, 4X4CB*, 4X4CX*, VU2EJ*, FA3AY*, CN8CS* and Europeans*. **4TN** is the next in line with HC1FS*, JA4BB*. VU2EJ*, VS1FE*, VS6BE*, DU7SV*, followed by Basil **6BS** who reports ZS5QV*, VS1FE*, VS6BE*, G*, DL*, VU2CQ*, CT1FI*, VU2RX*, Europeans, ZC4RX.

28 Mc.: Good short-skip conditions naturally observed on all appropriate bands suddenly caused an improved activity on this band. W2JAC/MM is reported by almost all stations nowadays interested in "Ten." This station is aboard a ship at present cruising in Australian waters. Further reports came from **3YS** with W5MET/MM and KH6ARN, and Les **4XJ** (the VK4 station mentioned in this place in January "A.R." should also read **4XJ**) heard W6VAD, W3OZA/MM, and said that **2AFE** worked W6BLZ.

GENERAL NEWS

On the 4th January, the Kista Dan, expedition ship of the Antarctic Division of the Dept. for External Affairs, sailed from Melbourne bound for Heard Island and Antarctica. This expedition to the Antarctic continent is intended to be the forerunner of others in future years. It is not here the place to emphasise the scientific importance of these expeditions, but it may be mentioned that any data collected by them will be of great interest for atmospheric research as well as for the eventual development of the Australian sector of Antarctica. As is well known by now, Bill Storer, **VK1EG**, is a wireless operator of the expedition. It is hoped that after a successful landing of the team, propagation conditions will be kind to us and allow communication. Whatever the case, Bill can be assured that we are looking for him on 7 and 14 Mc. on c.w. and, should signals be strong enough, on phone, too.

As can be read on the appropriate page of this issue, the 50 Mc. boys had a good time during December. Several VKs worked stations outside VK and ZL. Good work, fellows!

G6GN wants to contact VK on 3.5 Mc. between 1800 and 1900z (thanks 3CX). Other stations looking for VK on that band are **FO8AD** and **ZK1BG** (thanks BERS195). Liechtenstein (HE) is represented by **HE9LAA** and occasional expeditions signing . . . /HE. **CP1BX** should be on his way to Costa Rica by now. Alan, or on the air better known as "Chas", **VK1AC** has commenced operation from Macquarie Island. PZ1WX is back in PA0-land. EA0AO is reported to be active (thanks 6RU). F3AT is ex-FF8AG. Steve KG6AEX, well known to VKs as a consistent 21 Mc. station, is former holder of the following: W3CRW, KP6AA, KH6AEX (thanks 3YS). KZ5OM is ex-KP6AE. There is suspicion about FN8AD (see "A.R." 10/53).

Our most successful s.w.l. is undoubtedly Eric Trebilcock, BERS195. Eric can look back at long years of s.w.l. activity, mainly c.w. His results in 1953 show again that BERS195 is ever keen on the job. Eric heard 127 countries and 35 zones (120 countries on 7 Mc!) and mailed 1066 reports during the year.

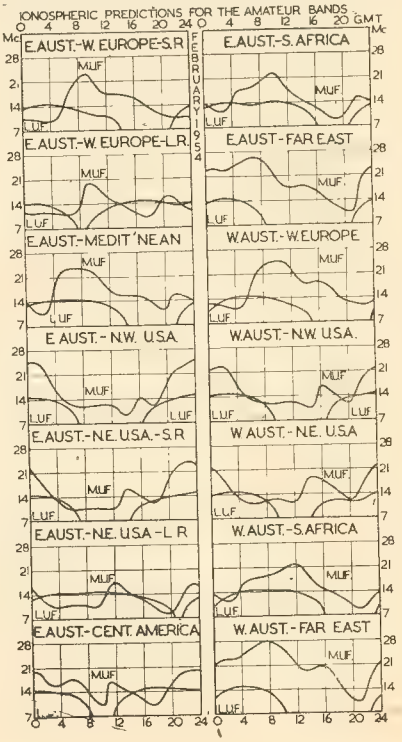
QTHs of interest—

VQ3RJB—Box 107, Moshi, Tanganyika.
VQ4EH—Box 71, Kisuma, Kenya.
ZP5DC—C/o. American Embassy, Asuncion, Paraguay.
3A2AW—Via SM5ARP.
CR6CK—Box 164, Marange, Angola.
CR6CS—Box 244, Nova Lisboa, Angola.
FQ8BA—Box 108, Brazzaville, French Equatorial Africa.
VP2DL—Box 103, Dominica, Windward Island, B.W.I.
KA0IJ—Bob, c/o. F.E.A.R.L., Box 111, Iwo Jima, c/o. A.P.O. 500, c/o. P.M. San Francisco.

QSLs received this month are—**2AHH:** YI2AM, DU1CV, KA0IJ; **2AMB:** 4X4CW, 4X4FQ, ZC4IP; **3PA:** VU2AT; **3ATN:** VK1HM, CP5EK, MP4BBI, VP5AK, FF8AS, VP2DL, SV0WJ, ZP5CQ, KA0IJ; **5JW:** ZC5SF; **5RG:** KV4BB; **9YY:** KV4BB, CP1BX, ST2HK, JZ0KF, ZC4IP; **3AHH:** SV1SP, OZ3FL, FU8AA, ZK1BG (3.5 Mc.).

My thanks this month go to VKs 1AC, 2QL, 2AHH, 2AMB, 2AOU, 3CX, 3IM, 3JJ, 3PA, 3TE, 3UR, 3XB, 3YS, 3ALQ, 3ANJ, 3ATN, 3AXR, 4RW, 4RT, 4TN, 4XJ, 5JW, 5RG, 5WO, 6BS, 6HK, 6KE, 6RU, 7DZ, 9YY and to s.w.l's. BERS195 (VK3), Norman Clarke (VK2), Dick Jenkin (VK3), and Dave Jenkin (VK3).

PREDICTION CHART FOR FEB., 1954



* 10 Belgravia Ave., Box Hill North, E.12, Vic.

FEDERAL, QSL, and DIVISIONAL NOTES

FEDERAL

RADIO AMATEUR CALL SIGN BOOK

Work has progressed very satisfactorily with the production of the Australian Radio Amateur Call Book and it is hoped that this will be available earlier than the target date in April.

Miss Touzeau, "A.R." Advertising Agent, has reported a most successful trip to Sydney after advertising support and it is currently estimated that more advertising will be available than was first figured necessary for a publication of this nature. This, of course, is all to the good and should assure its success.

The front cover blocks are in the course of preparation for the production of a multi-coloured cover of attractive design; this will in all probability appear as an advertising reproduction in "A.R." for March. Don't miss out on a copy of this valuable publication—place an order with your Divisional Secretary NOW!

And Remember! If you have any doubts as to the accuracy of your address on the files of the Postmaster-General's Department let us have a correction without delay. If you change your QTH between now and late March, let us know so that the very latest and up-to-date call book may be the result of our efforts. Address all correspondence relating to the call book to: G. M. Hull, Federal Secretary, Box 2611W, G.P.O., Melbourne, C.1.

PLAN TO EXPAND FEDERAL EXECUTIVE

Since the war the Wireless Institute of Australia has grown in every State and the Divisions have found it necessary to afford a larger membership on Councils in order to cope with the extra administrative work involved by the expansion of activities of the Institute.

During this period of growth the Federal Executive has remained constituted with five voting members who have mostly had to also accept the responsibility of running the Institute in the Federal sphere.

Although under its Constitution the Federal Executive may co-opt any number of people to undertake various tasks, those people have no vote on the Executive and therefore virtually no say in what the Executive does.

To afford a more efficient Executive body to deal with the ever increasing tasks that come before it, it is proposed to make an early move to amend the Federal Constitution to provide for the expansion of voting members on the Executive.

NATIONAL FIELD DAY CONTEST

ALL BANDS ON SUNDAY, 14th FEBRUARY, 1954

See "A.R." page 10 of the January issue for details. Write today to the Wireless Inspector in your State for your PORTABLE PERMIT.

Fixed or Home Stations, do not forget there is a section for you, too. Certificates will be awarded to the top scorers in the various sections in each State.

FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

The results of 6th All European DX Contest 1952, staged by the Danish Radio Society as part of their silver jubilee celebrations, are now to hand. It is indicated that this Contest has now been abandoned. The winner for Australia is our old friend Fred Haas, VK5FH, with the fine score of 4,928 points. Then follows VK2GW 1,218, VK3XK 432, while a check log was received from VK5RX. The aforementioned scores are in the c.w. section. No logs were received from Australia in the phone section.

New rules have been issued by the E.D.R. for their "OZ-CCA" diploma. The old rules proved too difficult for non-Scandanavian countries to comply with and many modifications have now been introduced to make the award easier of attainment. Information is available from this Bureau.

A fine call book has been issued by the J.A.R.L. Listings are most comprehensive giving the call sign, name, address, bands used, types of emission used, date licence first issued, occupation and date of birth of the licensee, and telephone number. Only thing that appears to be missing is the size scandals worn by the holder. Listings are given both in Japanese and English except for Occupation which is stated in Japanese only. Much other general radio information is included in the book.

Quite a few Hams were included among the 300 people who gathered at 3 North Wharf on 4th January to witness the departure of the Kista Dan for Antarctica, and to say au revoir and bon voyage to Bill Storer, VK1EG; Lem Macey; George Delahoy, VK1DY; and John Gore, VK1PG. Seen among the crowd were Hans VK3AHH, Brian ex-VK1BA, Eric ex-VK1EM, Vic VK5JH, Dick VK3XD and yours truly.

Fred Cropley, ZL2AAH, complete with XYL, and seven, repeat seven, sons, recently arrived in Melbourne to take up residence in this premier city. A wise choice Fred and welcome to you all.

Ken Smethurst, well known as MP4BAD a few years back, is now operating as DL2UY and asks for QSLs to be sent to: 1750377 Cpl. K. Smethurst, O.M.C. Flight, 2 Group (Unit) Signals, R.A.F. Sundern, 2nd T.A.F., B.A.O.R. 39, Germany, or via R.S.G.B. With an address like that, who would blame Hams for choosing the alternative.

Dolf PA0RFL (ex-PK2ZZ) has enlisted the aid of his old friend, Col. Wright, VK7LZ, in an endeavour to obtain outstanding VK QSLs for his PK2ZZ operations. Dolf would be happy to receive a card from the following VK stations: 2VA, 3ADZ, 3JJ, 3GU, 3HL, 3APA, 4FY and 4DE. Dolf has a close attachment with Australia, being a member of the Dutch 18 Squadron during the War. This Squadron, for a period, was domiciled in and worked from VK. Dolf also married a VK4 girl and one of their two children was born in VK. Any of the above stations can send their cards to VK7LZ, 3 Knight Street, Launceston, Tas., and Col. will see they reach Dolf safely.

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NEW SOUTH WALES

The last meeting of this Division was the Christmas Social which was held at the usual meeting place and was attended by approximately 70 members. About the only business that was discussed was preliminary discussions on the Constitution.

Coloured slides were shown by Ken 2AXZ and the Secretary Dud 2LQ covering a variety of scenes from Norfolk and Lord Howe Islands, last year's Zone Convention at Urunga, Warragamba Dam, and Southern Tablelands of VK2. Last, but not least, in the boys' estimation, Ken's professional models aroused wide interest and requests for telephone numbers. Supper was served and everyone had an enjoyable evening.

The Division had a visit from a Magazine Committee member in Ron 3RN. A few discussions were held at the Pharmacy and one in the electrical department of a well known furniture store in the city.

WESTERN SUBURBS

All's quite on the Western Front is an old saying, but it is still true for Ham Radio hereabouts. 2DP has put in an appearance from Annandale on 21 Mc., but 2AGG appears to have given it away for wearing a check shirt and square dancinf. 2AMY still plodding around 20 mx, but v.f.o. controlled now. Reg 3SP paid a visit to a number of us around here. I see there is to be a newcomer from Concord Road, Concord (no call as yet). O.T. 2FU back on after many years. Back on also after 12 months silence is 2AAH of Strathfield; good to hear you Harold.

Paid a visit to Bob 2AHF with Alan 2AOI of Concord and we were much impressed with the size of the shack, enough room to swing two cats, and completely shielded (probably for t.v.i.). A surprise in PA0ASB on 7 Mc. caused a sensation, but it turned out he was in Guilford using his old call as a portable until his VK call arrived. 2AXZ hibernating and 2ARF preparing to shift QTH and indulge in some h.f. work. My telephone number was wrong in the December issue, it is LA 5234 (days only). Well hoping to get some dope, 73.

HUNTER BRANCH

The main event for the month was our Hunter Branch Christmas Social, held at Henderson Park Hall, Adamstown, and attended by 130 Hams, XYLs and Harmonics. Among those in attendance were the Divisional President and his wife, Mr. and Mrs. Jim Corbin, who made the trip from Sydney to be present, also Doug 2ASA from Wyong, "Major" 2RU from Gosford, Bill 2AEY from Taree, and Jeff 2VU and Alec 2JZ from Singleton.

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Urunga Convention

The usual North Coast and Tablelands Convention is to be held at Urunga again this Easter. Make your plans now.

Committee is under the chairmanship of Zone Officer, Noel Hansen, 2AHH.

Interstate visitors are requested to make their arrangements early by contacting 2AHH, 2XO, or any of the North Coast gang for full details.

It is too well known in VK2 and VK3 to warrant further comment.

The Christmas Tree, which had pride of place on the floor, was liberally adorned with coloured lights, decorations and presents and was a credit to the members who erected it.

The Social commenced with games for the children followed by films, chosen to interest young and old alike, after which the children were issued with ice cream and cordials whilst awaiting the arrival of the "white whiskered gentleman" in the shape of John 2DZ, our Hunter Branch President. To the tune of "Jingle Bells," Father Xmas entered and distributed presents to each child in the hall, each lady then received a present for which they were allowed the honour of kissing Father Xmas (Note.—My name is on top of the list to be Father Xmas at the 1954 Social). All OMs then received their present, with Syd Daniels receiving a special present for Ron 2ASJ, who was unable to attend and whose absence was missed by many.

Frank Hinks, A.R.I., who has recently acquired the call sign VK2AUH, was then suitably initiated into the ranks of Ham Radio by Ken 2KG assisted by Frank 2FX. Because most Hams are a sucker for disposals, Frank was handed an all-day sucker, then because Frank is short of space at his new QTH he was given a "sky hook" attacked to a rubber balloon. For DX he was handed a pair of "cans," 12 oz. tomato juice variety. A wavemeter was next issued to him, being a 3 ft. long stick with a "standing wave" mounted on it, a toy trumpet was next issued as a modulation indicator, then the "Call Book," consisted of a Sydney telephone directory, which Frank was assured contained thousands of "calls." The "key" presented was one which would grace any 21st birthday party and the "log" was of stringy bark. Each Ham must have a "bottle" and the one Frank received was of the gaseous emission type filled with the brown liquid that cheers. Finally, Frank was presented with a "receiver," small child's type plastic with a handle attached. A QSO was then carried on with Father Xmas by emptying the contents of the "bottle" into the "receiver" and Frank and Father Xmas suitably imbibing of same.

A Buffet Supper was provided which suitably refreshed all present, after which all returned to the main hall to witness the "Eightsome Reel," a folk dance given by members and their wives, trained by Mrs. Greenhalgh. The Reel, which was one of the highlights of the Social, was performed by Mr. and Mrs. K. Greenhalgh, Mr. and Mrs. J. Clarke, Mr. and Mrs. J. Cowan, Max Sobels and Joyce White. The ease and grace with which the dancers performed this Reel was a credit both to Mrs. Greenhalgh's training and the dancers' natural aptitude and stamina. General dancing, including Spot and Balloon Dances concluded another successful Hunter Branch Christmas Social.

Most Hunter Branch members will notice the loss of Bert 2CN from our ranks. Bert has gone to Toowoomba so it should not be long before we hear him with a VK4 call sign. Harold 2AHA has been touring Northern N.S.W. and Southern Queensland and as he had a portable rig with him was able to keep in touch with the Newcastle gang. Leo 2QB has also set off on a tour of VK4, but did not take a rig with him so we'll all have to wait till he gets back to see just how far he went. I received a letter from "Golden Voice" Ron 2ASJ lately wherein he reports that his 6 mx converter is going well and he is hearing ZL and VKs 5, 4 and 3.

Harry 2AFA, Neil 2XY, Bill 2AXM, Les 2AOR and Charlie 2ARV have been active on 20 mx lately, but DX is still scarce. Johnny 2DZ is shifting into a new shack and should soon be back on the air. Lionel 2CS is still in the process of settling down after moving to new QTH, but will be on again as soon as possible.

During the last opening on 144 Mc. on Saturday night, 19th Dec., Max 2OT and Les 2AOR worked Ted 2XX and Perce 2APQ in Sydney until 0145 hrs. 20/12/53. Max and Ted were reading each other 5 and 9. During the course of the four-way QSO various experiments with antennae were carried out. Ted 2XX disconnected his beam and used a long wire 150 ft. long on which he received Max 2OT 5 and 7, by using a dipole Ted could receive Max 5 and 6, and by using a 10 inch rat-tail file he could still receive Max 5 and 6. Max 2OT disconnected his beam and could receive Ted on a piece of copper tube 19 inches long at 5 and 6. Now, hold on to your braces, Max soaked 19 inches of **string** in salty water and using same as a receiving aerial could copy Ted at S4 R4. Ted, to satisfy himself it could be done, also soaked 19 inches of **string** in salty water and could hear Max S2 R3. A mutual exchange of pieces of string has been arranged between Max and Ted and they have been suitably framed on the walls of each shack. All sceptics please note, Les 2AOR and Perce 2APQ were in on this QSO and were witnesses to these experiments.

The next meeting of the Hunter Branch will be held at Tighes Hill Technical College at 8 p.m. on 12th February, 1954.

CANBERRA RADIO CLUB

The above club held its second Annual Social at the end of November when 45 members and friends spent an enjoyable evening in the club rooms. At the second Annual General Meeting, Norm Ritchie, 2ANR, was elected President and the positions of Hon. Secretary and Treasurer are filled by Les Sparks and K. McConnell respectively. The club tx is now under reconstruction under the leadership of 2JG and should soon be on the air again with a 599 signal—we hope! Morse classes will start again in the autumn and it is hoped that a few new calls will be added to the call book. Address for all communications is P.O. Box 59, Kingston, A.C.T.

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VICTORIA

Subject matter for this month is rather a problem. No meeting, no Tx Hunt gen, and no information to pass on from Council.

From my holiday listening there appeared plenty of activity, with plenty of portable stations about including 3JR, 3LN, 3SK and 3ADW. Let's hope all these chaps and many more go out for the National Field Day on 14th Feb.

3ARV and 3RN are two who are known to have gone to Sydney for the holidays. Did either of you chaps bring back any of that super disposals gear advertised in that area?

I hear the hard working fellows whose names appear on page one are looking for assistance. Volunteers will be called for at an early date. This looks like an opportunity for some of our associate members to take an active interest in the working of the Institute.

Sorry to report that 3OO has been in hospital for the last month. He will be there until the end of January at least. On his discharge, he assures me more time will be devoted to Ham Radio.

Visitors to the most untidy shack in VK3—a rather doubtful distinction—during the last month included 3RN, 3TX, 3AAF, 3AHC, 3ALK, 3ATK, 3AMZ, 5KF and 5JO. Ross 5KF had his brother-in-law with him, whilst Joe 5JO had his son Ray as pilot and a friend Doug as navigator. Joe had a special QSL card prepared for his mobile and portable contacts.

The VK5 President, scribe, A.C. member—a real little Noel Coward isn't he—must have the VK5 boys bluffed. Do you think either of them would give any information about that guy? No on your life! But at least I tried to get something.

Our Editor—Tom 3HX—must have more faith in the fair sex than any other VK. He took Jennie along to a party attended only by members of the gang and their XYLs. That's alright, but he left her with said XYLs for an hour. Tom old chap!! That's a very unwise move. You can never tell what irreparable damage you have done. That hour could have undone all the good work you put in during the last six months.

The next meeting of the Division will be held on 3rd February when a member of the M.T.C. staff will speak on Receiver Servicing. Don't forget the Tender Night in March. Start sorting out your bits and pieces now.

Remember last month the VK5 scribe offering to be Matron of Honour at Tom's wedding—with emphasis on the Matron. Well I hear via the grapevine that said scribe has had fittings for a wedding dress. The only comment I can think of is rude, so I'll keep it to myself.

The only late news gleamed is on the February Tx Hunt.

TRANSMITTER HUNT, 28th FEBRUARY

Details of the proposed marathon hunt have now been discussed and this hunt is scheduled for Sunday, 28th February. There will be four tx's to find, the second to be located at a spot suitable as a lunchtime location. It is hoped to award prizes, one for the winner and one for the next best performance. The scoring will be in accordance with a "standard" time to be set for each location, based on an average speed of 25 m.p.h. to the first location, and 30 m.p.h. for the remaining three (to curb the urge for excessive speeding!). Three points will be deducted for every minute a competitor arrives under the time decided upon, for each location, and one point off for each minute over the time. Opening of the sealed instructions and failure to find the tx will result in an additional 50 per cent. of maximum points being deducted.

Assembly point is at College Parade, rear of University at 10 a.m. No. 1 transmission will be on at 10.30 a.m. and off at 11.30 a.m. No. 1 location then becomes the assembly point for the commencement of hunt for No. 2 transmitter, which will be switched on at 12 noon and allowed to run till 1 p.m.

Break for lunch will be 1 to 2 p.m. when No. 3 transmitter will then come on, and go off at 3 p.m. No. 4 transmitter will appear on at 3.30 p.m. and off at 4.30 p.m.

Transmitters No. 1 and 3 will be on 3516 Kc. with call sign of VK3WI, and No. 2 and 4 on 3525 Kc. with call sign of VK3APC.

It is expected that a member of the press will be present and possibly also a newsreel photographer, so we ask you to come along bright and early, competitors and non-competitors alike, and make the day a success. Wear your Institute badge! Bring your lunch (and tea, if required), plus a map of approximately 40 miles radius of Melbourne. Bring the family, tell your friends to come along—the more the merrier!

Non-competitors who are unable to join in at the commencement, may assemble in College Parade at 2 to 2.30 p.m. and will be given directions from there.

NORTH EASTERN ZONE

It is regretted that Murray 3HZ was not able to attend a social function in Nagambie recently, all the leading lights in the local C.W.A. had been tentatively lined up so that the XYL would have been entertained while the OM was pumped on the activities of Alex 3AT, Peter 3APF, Les 3ALE, and Alan 3UI, however a study of bowls results reported in the provincial news-sheet suggests that the time was well spent elsewhere. Syd 3CI was after a VK9 contact on 6 mx when last heard of, and also assisting Doug 3IJ with a 6 mx converter; speaking of converters, it would be interesting to know if Keith 3JC has been converted to 6 mx yet or if he is still after the DX on 20. Des 3CO, another potential 6 mx fan, was to have a visit from Doug 3IJ a while back.

The last zone hook-up (December) was very hot in Benalla, the McCartney Trophy in Ken's 3KR shack reading 108 degrees, at this juncture Hugh 3AHF was reported to be knocking the tops off "807s." Jack 3PF is back on the job again, but latest advice has it that Howard 3YV is away on holidays, where, no doubt, Col 3WQ has also gone, and we hope that a rest, although possibly forced, is helping Jim 3JK back along the road to good health.

Chas 3ACW is still hot on the trail of his local history, but apparently Vic 3ABX has been working 20 mx while Frank 3ZU has been reported on 40 mx. Des 3BP is on the harvesting, in spite of similar commitments Henry 3HP can still manage a little radio. It is hoped that competition from the "Kanga Arms" is not using up the time George 3GD puts in on radio, best you get Tom 3TS in to taking the proprietor away fishing if he makes it too hot OM.

Before this meets the public eye, Associate Vern Wyatt and a mate, Lex, will have sat for their A.O.C.P. exam, and we all hope the questions were the ones they knew the answers to. Those in Country Fire Authority work have often heard of a "Proper Officer," if you have not seen a live one in captivity previously, look hard at Rex 3UR when you meet him next.

CESSATION OF A.F. TRANSMISSIONS

It is regretted that the A.F.T. Transmissions from VK3WI will have to be cancelled for the time being.

When it is possible to recommence this service full information will be contained in "Amateur Radio."

SOUTH WESTERN ZONE

Zone activities were at a low level during the holiday period although the zone hook-up is still going at 1000 hours every Sunday on 3600 Kc. How about some of you Geelong chaps joining us, you are still in this zone? The Geelong Club's tx was heard on the 3.5 Mc. band, being operated portable at the You-Yangs with a good strength signal. 3HG has joined in and he is operating from Pt. Lonsdale. Bill 3AMH is still missing, having been lost around Ballarat some weeks ago. Bert 3BI still manages to find a few minutes to put in an appearance. 3ADN has not been heard for some time, but is putting his spare time on bush fire net.

3BV too busy sailing boats during the summer. 3EQ chasing 522s and bits and pieces, looks like 144 Mc. again, what about it 3AKR and 3AGD. Bill 3WT and Ed 3AKE are having a spell in the hospital—don't stay too long, hope to hear you both soon. 3BU has his antenna OK now thanks to 3ALG and 3AWZ.

A discussion on the proposed cutting up of the zones using the regional boundaries has not met with approval in this zone. It would mean this zone would be cut into at least three parts, leaving three or four active Hams in at least two of the new zones. It has been suggested that a piece be cut from the eastern end of this zone only, lots more later on this matter.

FAR NORTH WESTERN ZONE

On Wednesday, 6th January, the Annual Meeting of the Far North Western Zone was held at the home of 3GZ. Members present included 3TI, 3MF, 3AJU, 3AUG, 3SN, 3AFP, Associate Fred Uchtman and visitor Evan 3AAP. Apologies were received from Frank 3FC who was unable to make the trip from Ouyen, also Ian and George from Mildura D.C.A. Office-bearers elected for the ensuing year were President 3GZ, Secretary 3TI, Treasurer 3MF. The Sunday W.I.A. hook-up will be taken by 3AFP, 3AJU and 3TI. Weekly zone hook-up will take place every Wednesday night on 7 Mc. band at 7 p.m.

Chas 3TI, who with Fred attended the Benalla Convention, gave us a very comprehensive report on the Convention and several items on the agenda paper were discussed fully. The meeting concluded with supper provided by 3MF's XYL. Bill and Charlie brought some two mx equipment, which was inspected with great interest by the members. A practical demonstration was given by Chas and Bill to prove that the gear worked. Chas operated his tx at his home and it was received on Bill's rx at 3GZ's shack. Quite a deal of discussion went on about the merits of various antennae for 2 mx. Bill 3AJU has a sked with the gang at Renmark in S.A. and has hopes of bridging the 90 mile gap between these centres. We hope to have more news of the 2 mx activity next month.

GEELONG AMATEUR RADIO CLUB

The month of December was an active one outdoors. On the 2nd a tx hunt was the order of things, the operators being 3AKE and 3APK. The location chosen was in the Barrabool Hills about 10 miles out. Results—1st, G. Wood and 3ABK; 2nd, 3AEH; 3rd, J. Beckingham and 3WT. J. Cations, W. Zimmer, M. Stock and V. Clarke failed to locate before closing time.

On the 13th (Sunday), V. Clarke and 3AWZ chose the site for another hunt, the location being off the Drysdale-Queenscliff Road about 3 miles from Drysdale. The only member to find the tx was 3AEH. Thanks to envelopes and directions, all parties met at Queenscliff for lunch and later another hunt taken out by V. Clarke and 3AWZ was located by all present, the first three being 3AEH, 3ALG and 3BU.

The Christmas Party was held on the 16th. Several films were shown including one loaned for the occasion by R. Hall, of the Moorabbin Club, which he had taken at several tx hunts.

3WT, 3AKE and 3BU are on the sick list at present, but latest information is that all are on the improve and we hope to enjoy their company shortly. 3AEH is on holidays and is operating portable in South Gippsland and has maintained a regular schedule with the lads at home.

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QUEENSLAND

December meeting saw a better than average attendance, though we sure could do with your attendance. Hope one resolution you make will be to attend your meetings more regularly in 1954. Two very interesting lectures were given, one by John 4FT on "Balanced Bridge V.T. V.Ms," and the other by Tom Athey on "Matching Transmission Lines"—both ably presented and enlightening.

The Dutch auction wasn't so successful as the last, maybe being so close to Xmas no one having any money. The hearing aids were balloted for and among the lucky ones were 4FT, 4TF and 4WF. John 4FT has converted his to a pocket rx for b.c. band and I believe with very good results, though he isn't having much luck with the crystal insert as a mike; looks as if you are stuck with the 3 inch speaker John.

Arthur 4AW filled the breach and organised the Xmas Do, which was well attended by, strange to say, quite a few who we haven't seen in many moons. With the goodies, the amber liquid, and the jokes—blue and otherwise—each and everyone enjoyed the night. Thanks for the effort, Arthur, may your beard grow long.

Frank 9FN (ex-4FN) has been enjoying a stay in Brisbane and as usual getting behind this Division with his usual activity. Frank organised a couple of broadcasts from 4WI, also prepared the editorial for "Q.T.C.," and by an large worked like a tiger. We certainly lost one of the willing horses when Frank left for New Guinea. We haven't been able to find a permanent home for 4WI since. All this and tripping to Lismore kept him busy. Hope to see you in a couple of years time Frank and I'm sure we won't give you so much to do next time.

Herb 4HB is in hospital at the time of writing this, hope your stay is short Herb. John 4FP has gone for a tour of ZL land. Jim 4OB is taking his National Service in Townsville in the Air Force. Listening around the bands I think most of the others must be taking holidays also, as there is very little activity. A word of warning; don't mention Melbourne weather to Keith 4KS as I believe it didn't treat him very well during his stay there. I told you to take your long underwear Keith, and a hot water bottle.

Believe Bill 4WF is doing some conversions to a BC348. Leon 4FW is having trouble with his, wants to know how to get rid of a high noise level which has recently developed. Maybe you two should get your heads together. Any other suggestions from you BC348 boys for Leon. Jack 4SF, betwen enjoying a brief holiday, has put himself up a new tower for his beam, must be good to be so energetic Jack. Also heard Jack working a couple of new countries. Del 4RJ and Chilla 4SD seem to keep the c.w. end of the band alive from Brisbane, though Bob 4RW, of Townsville, and Des 4GZ, Charters Towers, seem to cause the most QRM here on 20 mx. Clive 4CC, when not looking for flying

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saucers, seems to find time to play with n.b.f.m. and s.s.s.c. or something.

Harry 4OX (Mackay) put a very nice signal in Brisbane during Xmas. I believe he is the most active up there with an occasional burst from 4BQ.

The Rocky boys came through one evening on 20 mx and it finished up in a round table conference. Bill 4WD, the chairman hi! Bob 4NG was there, after chasing home the bacon, and Eric 4EC keeping an eye on Bob. I gathered when things are quite up that away, for amusement, they start a QSO on 80 and generally wind up through all the bands to 6 mx, not a bad way to spend a pleasant Sunday. Aussie 4TN, Don 4GP and yours truly holding the line on the Brisbane end, would like to have another rag chew fellows.

Frank 4ZM is enjoying his holidays on the North Coast, looks like he has deserted the c.w., as I heard him on phone with a clamper tube modulator. John 4RT always seems to be about when the DX is there, so it's the only time I hear him here. Aussie 4TN has been doing some construction with a portable rig, and when not trying it out is hunting for the DX on all bands, especially 21 Mc.

Well chaps by the time this is read, the nominations for Council will be due in, so if you have aspirations of becoming a Council member, or you are not satisfied with the workings of the present Council, let's have your nomination as new blood on Council is always welcome, plus the fact it gives one and all the opportunity to get the inside on the multitude of business that is handled by the Council, and a clearer picture of the Institute itself.

Also keep in mind the Annual Dinner and general meeting for the election of officers. Both functions worth remembering.

April will be the month for the VK4 Intrastate Contest so if you want your call on the shield, start cokeing up the rig as the Contest is going to be tough this year, as there is quite a lot keen to get their name in top place.

So for now better conditions for 1954 and more support to the Institute.

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SOUTH AUSTRALIA

The VK5 monthly general meeting for December took the form of a Xmas get-together at which approximately 120 members and several invited guests in the form of "Oldtimers" met together to celebrate the coming festive season. The word oldtimers only means oldtimers in Ham Radio and does not mean to infer that the invited guests were all decked out in long white beards and carried gnarled walking sticks. Among the oldtimers were Merv. Brown (ex-5MB), Clem Ames (ex-5AV), Fred Carter (ex-5GK), Cliff Churchward (ex-5BA and incidentally 70 years old), Nobby Prince (5WK), Gordon Ragless (5GR), and ex-associate member Herby Zietz. Apologies were received from Ken Milne, Ivor Thomas (5IT and incidentally one of the finest of the ex VK5 Presidents), and Lance Jones (ex-5BQ)—all of whom were absent from the State on business. John Clifton (5HI, who is one of the leading DX men in VK5 although a "shut-in") came along to the meeting and renewed many acquaintances made on the air, and our thanks are due to Ken 5KC for going along with his conveyance and picking John up and delivering him safe and sound to the meeting, later returning him to his home after spending what must have been a memorable night in such congenial company. Nice work Ken, little actions like that are the beacons along the road of Ham Radio which will still be shining when most of us are forgotten.

Profiting by past experience, Council decided that the entertainment side of the evening should follow the lines of an ordinary general meeting and Mr. Keith Manning, a member of the Adelaide Camera Club, came along and gave us an excellent illustrated-in-colour talk on his recent trip to Ceylon. The reaction of all present to this talk was particularly good, and Doc 5MD, in his proposal of the vote of thanks, expressed the view of all present when he said that we were all sorry when the lights went up, because our trip to Ceylon had come to an end much too soon. The applause that greeted the vote of thanks should have clearly indicated to Mr. Manning just how much he had contributed to the success of the meeting.

At this juncture the seats were all pushed back to the wall and all the goodies placed upon the tables, to the intense satisfaction of the President. Everybody appeared to have a good time, and it would appear that this type of Xmas meeting has come to stay, although it is possible that there are one or two members who would prefer the old style of Xmas social and its associated entertainment, but Council can only hope to please the majority and I think that most will agree that the 1953 Xmas get-together was a good effort.

The amount of food brought along by the members was as last year colossal, and the remains of the feast was taken along to one of the orphan homes in the vicinity by Gordon 5XU and I close the description of the night with the fact that the Xmas cake, complete with a beam aerial and a miniature Father Xmas (labelled Pansy), was presented to the Division by Jack 5JZ and members are all appreciative of this annual gesture on his part.

The tone of several Xmas cards received here seems to suggest that the feud betwen Doc 5MD and myself is all a lot of boloney, and I hasten to say that it is none of my seeking, but arose from a misunderstanding at a little social evening we once attended. During supper, Doc's wife and I were quite enjoying ourselves at the table eating a number of those little roasted birds called quail. May, that's his wife, and I, sure were making those birds disappear and certainly May did her share. Later on in the evening it came my turn to add to the entertainment, and without stopping to think I sang that sweet little ballad, "How happy are the birds in May." Need I say more? Doc has never forgiven me, and if you want further proof, take the way I am treated on the few occasions that I visit the QTH of Doc. The first thing that he does when I enter the drawing room is to manacle me to one of the hardest chairs in the room and stand gloating at me whilst I start picking a bag of oakum instead of playing bridge with the rest. When supper comes around, do I get any of the famous Barbier sponge cake, you said it, I don't. All I get is a plate of rock buns and a small hammer, accompanied by a glance of compassion from May. When we leave the precincts I am accompanied to the gate by Doc, who hands me the money for the oakum picking and tells me in a condescending voice to try and keep on the straight road up to the bus or else I might be in trouble. No feud? What do you think? I'll say that there is a feud, and all over a few little birds!!

UPPER MURRAY AREAS

The December meeting of the Upper Murray gang was held at the QTH of Tom 5TL and there was a distinct experimental flavour to the gathering due to the fact that all present brought along some experimental gear for exhibition. If it had been held down here at the city it could have been mistaken for a buy and sell night, but as it is the practice in the Upper Murray areas to give away instead of to sell, then such a supposition would be entirely out of order. (Do I see a crack in that remark? Maybe it is my suspicious nature Tom!!) Fred brought along his efforts in a multi-band tank tuner unit, Hughie brought his grid dip meter to ensure that Fred was OK, Tom produced some 144 Mc. gear, which when tried out caused Tom to go a delicate shade of pink, associate member Wolfgang brought along a small rx that he had made up, and Hurtle just brought himself along to ensure order. There were several absentees, Harry being caught up with his vocation, Alex reported sick, but advised that he had given Murray a relay for Tom. The relay and Murray did not appear at the meeting, and the worst is felt!! A good time was had by all, and the usual Xmas greetings exchanged.

5TL is building a "City Slicker" for 144 Mc. and has high hopes of something really promising eventuating. Tom is a little dubious as to whether it will work in the country. I am sorry that I cannot answer that one, but I am a 288 Mc. man! Ahem!! 5KW has a fluorescent hanging near his 6 mx beam and as yet no neighbours have copied him on their b.c. aerials, but you can never tell. Possibly Harry is preparing the contract forms for the home lighting service before he jacks up the power. 5XO expects to be mostly inactive due to an accumulation of work and also because of a projected shifting of the QTH to Loxton in the near future. This Alex certainly gets around, why not pay the rent? Sorry Mr. Kelly, sir, just a slip of the pen, Sir!!

5MA will be QRL with the coming fruit harvest. 5RE paid a flying visit to the b.b.s.s. and had a few words about radio with one of the technicians on duty, peaceful words of course. 5BC makes it a little hard for me because he is mostly on the v.h.f's, and of course that means that I cannot write of the doings of Hughie without stepping on the corns of the v.h.f. correspondent, to wit, Shylock 5XU. 5CF and the relay are still missing, and until the whereabouts of Murray is known I can say no more.

Renmark recently had a road courtesy test and a certain Ham from that area was an entrant. Riding down the road on "Rattling Salvation," he came to a small fire burning on the side of the track and proceeded to dismount and put it out. He was approached by a man who told him not to bother as it was part of the test and he had scored full points for that part of the test. Mounting his motor bike he set off down the road and after successfully negotiating a few more tests, he came upon another fire burning in a man's front garden. Hastily dismounting he again rushed in and started kicking the rubbish around and soon had the fire well and truly out. Imagine his feelings when a big burly brute came out of the front door of the house and said, "What the —— —— —— do you think you are —— —— doing, it took me fifteen —— —— minutes to get that —— —— rubbish to start to burn!!" The said Ham retired in extreme mortification and lost several points for being in late at the finish. I have purposely left out the name of the said Ham because I do not wish to embarrass him. Kindhearted Pansy they call me, among other things!

Hal 5AW walked up the aisle with his daughter this month and said "I do" in a loud and well modulated voice. Present at the Church were Doc 5MD, Ross 5LW, Gordon 5XU, and that sartorial leader of dress, complete with bow tie, Warwick 5PS. My reason for mentioning these gentlemen is because when the bride's motor car arrived it had a car aerial, but when it left it did not! The above mentioned gentlemen including the bride's father were taken to the vestry and interrog—interogg—innterrog—well, anyway they were asked some very pointed questions. It is expected that an important statement will be released at any time now, but I cannot give it to you as yet owing to finding it a little difficult to type with these handcuffs on!! After the work of the day is completed, possibly Barbier will let me listen in to the Amateur bands on his rx. Vive-Barbier!!

The Woomera Radio Club has by now received the special certificate of affiliation and should be very pleased with it. It was certainly a work of art and the full credit must go to Betty, who for your benefit is the charming daughter of Reg 5RR, the genial Secretary of the VK5 Division. It was displayed at the December meeting for all to see and received its full share of praise from the members present. The design by Betty was a real knockout, nice work my dear! (I'll get on!) The recently erected vee beams are now functioning, and when the club gets their new tx feeding the beams, then they will be heard in and around. They have worked an MP2, getting a 5 and 9 report, which is not bad for their 30 watts on phone, and the President of the club, Len 5OC, has had a number of contacts with his friends in VK5, with good reports. The Regimental Trust Fund in Woomera has granted the club a sum of 100 quidlets, which will put them on a firm financial footing as well as enabling them to purchase sundry pieces of suitable equipment. The club station, excuse my blushes, 5WC to you, has been putting in a consistent signal down here, in and around Adelaide, on 7 Mc., and will be pleased to have a contact with all who may hear them. No QSL card has as yet been printed, but several ideas have been submitted, the President of the VK5 Division being well to the front. Anyway blokes, they have promised to QSL.

At Xmas time, previous to this year, I have always watched my daughter and my wife receive bundles of Xmas cards from various friends, and with a lump in my throat seen them display them on the lounge room mantle piece with a somewhat pitying look in my direction, as all that I have ever received have been bills. I must admit that I got something of my own back when I used to sneak into the lounge and huff and puff and blow all the cards down to the floor amid screams and yells from my daughter, but this was poor compensation for not receiving any cards myself. However, and I repeat, however, this year for some reason or other I received so many cards from Hams all over VK that my wife and daughter had in self-defence to sink to the level of huffing and puffing themselves, amid ribald cheers from VK's number one Xmas card receiver. The cards were many and various, polite, threatening, insulting and several indecent. The last named I placed in the hands of the police, and if some of the "top brass" connected with this magazine figure in the police courts in the near future, don't place all the blame on me. Seriously, I was a little overcome with all my sudden popularity, and I can honestly say that I did not realise that all the bilge and tripe that monthly issues from my typewriter was read by so many of the gang in VK. I regret that I cannot answer them all in return, mainly because my XYL has not given me my next month's allowance, but I would like to say thanks a lot fellows, and your Xmas greetings are reciprocated heartily by poor little Pansy. Apparently you want me to continue carrying on like a "Nong-Nong" in 1954, and if that will help the cause of our grand hobby, Ham Radio, then who am I to quibble. Don't take me too seriously is all I ask!!

SOUTH EAST AREAS

5CH has started to build his new shack, which is a move in the right direction. Claude has been heard on the v.h.f. frequencies and also the emergency fire service frequencies. 5TW has had a few contacts on 20 mx and also manages to keep his skeds on 2 mx. Tom tried to work

Joe 5JO on portable but without success. 5KU is at present on holidays but has found time to lower the beam for slight modifications. Erg intends to instal a motor on the beam which should make operating much easier. 5JA has been progressing steadily with his tape recorder but most of John's spare time has been given to the E.F.S. base station. 5FD has been heard on 40 mx several times, so that is a good sign, but rumour has it that John is very busy designing a garage door that will open just before the car hits it; very funny, very funny. 5MS is still very active on 20 mx and has also been heard on 40 mx on sked. Stuart has had quite a few visitors over the holiday period, they did not have any trouble locating his QTH as his beam and tower is quite a landmark in Mount Gambier.

5CJ has not been very active apart from the usual skeds, but Col has been meeting up with a number of visiting Hams from all States. Greetings reciprocated Col.

Among the visiting celebrities to the Mount over the holiday period were Ivan 5QV and a friend, Noel 3ZO and his XYL, and Joe 5JO and his son Ray, together with a friend named Doug. Joe was portable on his way to VK3 and proved a good ambassador for his Division by calling in on every Ham available on the trip. Both Col 5CJ and Tom 5TW tried to contact him on his way from the Mount to Melbourne, but were prevented by noise and conditions. It has been suggested that possibly he was grabbed as he passed the border, but there is no confirmation of this as yet, although if they were travelling in his son's station waggon with the tissy blue curtains, well, anything could happen!! You ought to see it, it has all mod. cons., hot running maids and everything. What am I saying?

A visitor to our fair city over the Xmas period was Gordon 3XU (ex-5XU) and his XYL. They renewed a number of friendships made many years ago and paid a visit to the tent of Warwick 5PC and discussed with relish as to how they used to take on any Government department for an argument, at the drop of a hat. Both Gordon and his charming XYL don't look a day older than when they left VK5, in fact when I entered the lounge room in my wheel chair and feebly shook them by the hand, I formed the impression that they had possibly discovered the secret of eternal youth. We spent most of the time together each trying to outdo the other as to the wonderful qualities possessed by our respective large families. We finished about equal on points, although I felt that my suggestion that I might be a contender for the grandfather stage should have won the day!!

Another welcome visitor to VK5, and also the b.b.s.s., was John 3ABI who paid several visits to the local boys and made a number of new friends as well. His main reason for the trip to VK5 was "Cherches la femme" and from what I am led to believe, it is real serious. Anyway John, you could do worse than settle in the premier State of the Commonwealth. VK3 and VK4 scribes please note!!

By the time that these notes are being read, nominations for the 1954 Council will be the order of the day. I should say that most members in VK5 realise that being a Council member is not a job to seek, this being amply illustrated in the past by the lack of nominations, and I also think that members realise that without an efficient Council the VK5 Division would soon fade out. Therefore I wish to stress to you all that some new blood, and some young blood, will be an asset in the coming year. Any member of the VK5 Council will be more than pleased to take a well earned rest, and if any member hesitates to nominate for the Council because he feels that he might be hurting somebody's feelings, then I say forget it, the pain will be a pleasure. This is a chance for any efficiency expert to hop in and run the VK5 Division according to the lines advocated sometimes on the air, and sometimes in the gutter after the general meeting, but the main thing is to hop in and get yourself a headache and secure a hide like an elephant. It is with regret that I announce that there is no chance of tipping me off the Council because under the rules, the retiring President does not face a poll, BAH!! And a couple of POOH POOHS!

"They all laughed when I sat down to play!" A couple of months ago the President of the VK5 Division, amid terrific insults and mud slinging, announced that he was going to experiment on 288 Mc. and warned all and sundry to be prepared for action. The mirth and ridicule that ensued for weeks after this announcement came from the youngest associate member to the veteran in v.h.f. tchnique, and through it all, with a grim smile on his Grecian features, the indomitable President carried on. If you care to turn to the v.h.f. notes for this month and look under the VK5 notes, providing that the correspondent in sheer jealousy has not forgotten his duty, you will see that the winner of the 1953 V.h.f. Intrastate Contest is none other than W. W. Parsons, 5PS. Sheer modesty stops me from telling the whole story of the Contest, but this I will say, I scored four times more points than any other contestant, and as the reigning v.h.f. champion for the coming year, I salute you. Pardon my titter! but my tittering mechanism is working overtime! I desire to thank Norm Coltman for planting the idea of the v.h.f's. in my mind, Charlie 5ON for presenting me with the beam, Reg 5RR for putting the life blood into the tx, and Rex 5KY for so manfully coming back to my hesitant and feeble plea for a contact on 288 Mc. Good heavens! Did I do anything toward winning the Contest? As I said before, "They all laughed, etc., etc." You beaut!!!

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WESTERN AUSTRALIA

The Christmas and New Year has come and gone; just a brief interval in the "march of time." (I hope it is not a copyright expression —Ed.) To the interested Amateur it is a period given over to family affairs and as soon as stability is established, the game goes on. Festive times do not produce more Radio Hams, or see the existing ones seek new pastures. All look forward to more suitable conditions for say DX, or to construct that new tx, or rebuild that double conversion super; each to his own line of experiment. It seems to many of the older Hams that the official designation was changed from Experimenter to Amateur for a purpose. Was it because so many of us were just copiers, and followed the book without even a thought of the why and how of the equipment being constructed? Why leave it entirely to the other fellow—the professional constructor to the Amateur book on radio to do all the experimenting for you? Be an experimenter first and last and add something real to the progress of radio. Every little helps, and let us have some original articles in our magazine. In the last few issues a medal should go to VK6EC, not only for research, but for making the results available to inspire others to go thou and do likewise.

Events since the last publication consisted of the Annual Picnic held at the Zoological Gardens, which turned out a great success. The children were well catered for, and the Social Committee, with 6OR at the helm, rowed, steered and stoked up the fire and even put on a Punch and Judy show. Thanks are due to 6OR and the Committee who did their job and pulled in others to help. Old, and we hope, new members turned up.

The last meeting for the year was in the nature of a social evening and whereas at ordinary meetings the rag chew period lasts for about ten minutes, on this occasion it lasted practically the whole evening; so did the refreshments! Thanks to the judgment of the commissariat department. A pleasant idea was to invite all our special friends, all those outsiders who gave us lectures during the year, and also many now and one-time members we are pleased to record did turn up and received a cordial welcome. Evidence of the unity existing in VK6 need not be looked for any further than the retention of the R.D. Trophy. Team work was essential to do that.

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TASMANIA

As this month has been one mad rush to complete the Institute Exhibit at the Sesquicentenary Science Exhibition, these notes are rather brief and for this I apologise. The January meeting was held on Wednesday, 6th January and was well attended considering the holiday period. There was little business to attend to, the main items being the taking of nominations for the 1954 Advisory Committee and the arranging of a roster of operators for VK7WI at the Exhibition. After the meeting those present moved to the City Hall to view the progress being made on the VK7WI stand, and further work was done so that the exhibit would be complete for the opening on the following day. 7BJ and 7AL retired early in the meeting to work on the VK7WI tx—these two members doing excellent work to get the rig finished five minutes before the Exhibition opened.

The Exhibition was opened at 3 p.m. on 7th January by His Excellency the Governor, who inspected the station and showed great interest in Amateur Radio. Although conditions have been rather poor so far—20 mx being the only usable band—all Australian States including VK9 have been worked as well as several ZLs. The high noise level at the hall absolutely prevented using a rx there, especially when the Hydro Electric Commission start demonstrating with arcs and sparks several feet long. The receiving centre was set up several miles from the hall at the residence of Mr. Bill Tait and the output from the rx relayed to the hall via a 2 mx link, the rx may also be tuned from the hall by means of the same link. This completely overcame the noise problem, and Bill has been doing good work by being in attendance at the rx all the time and keeping the show going.

Since the new 7WI tx was not quite ready for operation, 7YY very nobly loaned his rig so that the station could go on the air, and a very nice rig too Bill—complete with foot control and all.

The exhibit has attracted large crowds so far, especially when the band is open and contacts are coming thick and fast. The show I think can be considered to be a complete success and will do much to advertise Amateur Radio and the Institute. This success is entirely due to all those who gave their time and to those who could not spare the time but made donations in other ways.

HAMADS

9d. per line, minimum 2/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th of the month, and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line. Dealers' advertisements not accepted in this column.

FOR SALE.—Soundmirror Tape Recorder deck, fast forward, etc., £60 or best offer. Also AR7 Receiver, 500 Kc. to 32 Mc. Wanted to buy or exchange above for good Communication Receiver, band switched (not AR7 type). W. Brownbill, 71 Gheringhap St., Geelong, Vic.; Phone 5674.

MUST QRT, going Overseas. Selling complete station comprising Eddystone Model 750 Receiver with matching speaker and phones, almost new. 100 watt Rig complete on Eddystone rack and panel, v.f.o. control, fully modulated 50 watts. Prefer sell complete, but might part. Also Army 22 transceiver complete. Large quantity parts. Avominor, large Universal Avometer, Scope Iron. Write Box 19, Rocklea East, Brisbane, S.6.

OFFER wanted, complete 3 el. rotary beam (14 Mc.) including selsyn motors, indicator, beam motor, transformer, 40 ft. steel tower. V.C.T. Valve and Circuit Tester, £20. Heavily chromed bug key, auto dots and dashes, £5. Xtal 50.330 Mc., 30/-. R. Guthberlet, Box 73, Port Pirie, South Australia.

SELL.—Ham Radio parts: Power Supplies 200 Ma. mains and m/g; Leach Relays, and others; Meters, Condensers, etc.; 5" C.R.O. parts. Must sell, best offer part or lot. Apply 13 Rutland Ave., Brighton, South Aust.

SELL.—4 G.E. Tuning Units (£8); 1 R.C.A. 100 Kc. Crystal (£2); 10 Xtals various frequencies (£5); 1 BC733D Receiver less crystals (£5); 1 Command Receiver 6-9.1 Mc. (£4/10/-); 1 Command Xmitter, 5.3-7 Mc. (£4); 1 TA12D Xmitter (£10); 1 AR8 converted to AC with 8 inch speaker and power supply (£20); 1 AT5 Aerial Coupler (£3); all apparatus complete with tubes; 1 Command Xmitter Aerial Relay Unit (£1). £60 the lot (will separate). J. W. Nairn, 22 McLean St., Morwell, Vic.

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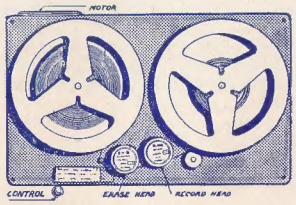

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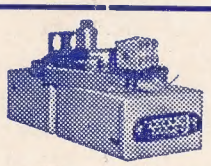
★  ★

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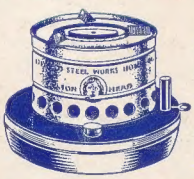

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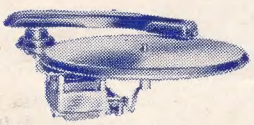

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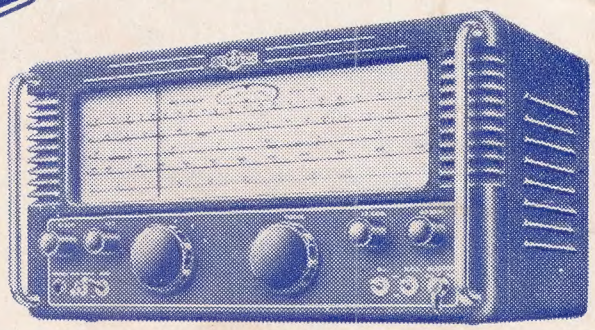

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BANDSPREAD

The ingenious mechanical bandspread mechanism gives an almost linear scale equivalent to about 32 feet on each tuning range. The figures that follow apply to bandspread coverage on the bands allocated to Amateurs at the Atlantic City Conference. Variation in the width of each Amateur band necessarily affects the degree of coverage and against each band we have shown the number of vernier divisions required to tune over the corresponding number of kilocycles for each separate band width.

Band Width	Tuning Coverage on Vernier Scale	Vernier Divisions of Band-spread	Kilo-cycles in Band
29.7 Mc. to 28 Mc.	34.375"	208	1700
21.45 Mc. to 21 Mc.	7.5"	45.5	450
14.35 Mc. to 14 Mc.	6.45"	39	350
7.3 Mc. to 7 Mc.	15"	91	300
4.0 Mc. to 3.5 Mc.	61"	364	500
2.0 Mc. to 1.8 Mc.	30"	182	200

TUNING RANGE

The receiver is provided with four wave bands, the first three overlapping and covering from 32 to 1.7 Mc. and the fourth covering 1465 to 480 Kc. Each band is selected by a low capacity switch. The actual ranges are:

(1) 32 Mc. to 12 Mc.
(2) 12 Mc. to 4.5 Mc.
(3) 4.5 Mc. to 1.7 Mc.
(4) 1465 Kc. to 480 Kc.

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A socket is fitted at the rear of the receiver, into which an external "S" Meter Unit—Cat. No. 669—can be connected.

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